

BULLETIN OF MISCELLANEOUS INFORMATION

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ROYAL BOTANIC GARDENS, KEW

I.—REVIEW OF THE WORK OF THE ROYAL BOTANIC GARDENS, KEW, DURING 1940.

General

The amenities of the Royal Botanic Gardens as a place of resort for the public were maintained with little alteration throughout the year. Floral displays out-of-doors continued much as usual, and the plant-houses and museums were kept open except for occasional periods when repair work was made necessary by damage to glass through bombing attacks. The irreplaceable contents of the North Gallery were, however, removed to a place of safety and the Gallery has been closed.

Despite a considerable number of bombs which were dropped at various times in the Gardens and nearby, the structural damage has been confined almost entirely to broken glass, and the destruction of plants from the resulting exposure has, so far, been much less than at one time seemed likely, though there have been considerable losses in the Palm House.

Scientific activities have naturally been curtailed. The difficulties of transport have led to a great diminution in the amount of material, both living and dried, sent out or received, and it is not proposed to issue the usual detailed lists of consignments.

The number of men from Kew serving with the armed forces at the end of the year was 46. The Assistant Director, Mr. J. S. L. Gilmour, Mr. B. L. Burt, and several members of the clerical staff have been loaned to other Government Departments.

To replace the Student Gardeners called up for service, a number of fully-trained women gardeners are now being employed.

PUBLICATIONS. The shortage of paper made it necessary to restrict the distribution of the Kew Bulletin, of which seven numbers were published during the year.

AIR-RAID PRECAUTIONS. The A.R.P. organization has been maintained and strengthened to meet changing conditions.

HOME GUARD. When the Local Defence Volunteers were formed, in May, 1940, a Platoon of the Richmond Company was at once formed from amongst the employees of the Gardens. Sir Geoffrey Evans, Economic Botanist, was gazetted Platoon Commander. At one time the strength of the Platoon was over 50 men, but the number was later somewhat reduced by the demands of regular military service. In addition to patrolling the Gardens

area the Platoon furnished Guards for various important points in the neighbourhood. At a later date the Kew Gardens Platoon was disbanded and its members were absorbed into other platoons, and early in 1941 the Richmond Company was raised to the status of a Battalion, Sir Geoffrey Evans being gazetted Commanding Officer, with the rank of Lieutenant-Colonel.

The Gardens

GENERAL.—The year will be long remembered for the extremely hard weather experienced in January, February and March, lower temperatures being maintained over a longer period than had been experienced for the past 50 years. Many specimens, both old and young, of tender trees and shrubs were either killed entirely or cut to the ground, but the losses were not so great as was expected. The annual rainfall was 25.32 inches, but unfortunately this was not evenly distributed. After several dry periods, heavy rains fell in the late summer and early autumn. 31,106,000 gallons of river water were used during the dry periods, about the average of the past few years. Heavy snow-falls occurred in January, and snow lay on the ground for many weeks, but fortunately no great damage to Conifers resulted from this cause.

ARBORETUM.—Several trees were blown down or damaged by high winds, chief amongst them being the interesting female specimen of the "Lombardy Poplar," *Populus nigra* var. *italica*, growing near Kew Palace. Some young trees, cuttings of this specimen, are now planted in the Poplar collection and elsewhere. Several large Beech trees came down and were found to be badly decayed at the roots; as many of the old Beeches are attacked by fungus, further losses must be expected among them. The chief losses due to frost were among the *Cistus*, *Helianthemums* and the tree Heaths, *Erica arborea*, *E. lusitanica*, and in a lesser degree *E. mediterranea*.

In the early spring over 100 *Berberis*, grown from seeds collected in Asia, were planted in the Berberis Dell, many being new species recently described by the Rev. L. W. A. Ahrendt.

Wartime conditions necessitated the ploughing up of the large lawn near Kew Palace. This area, about $1\frac{3}{4}$ acres in extent, was planted with potatoes. The varieties grown were Great Scot, Arran Chief, Gladstone and Long Keeper, and the yield was just over 12 tons.

TEMPERATE HOUSE.—The Himalayan and Chinese species of *Rhododendrons* as well as many fine hybrids flowered exceptionally well, large plants of *R. Griffithianum*, *R. Maddenii*, *R. Wightii*, *R. Falconeri*, *R. formosum*, *R. Dalhousiae* and *R. Veitchianum* being very fine; *R. Griersonianum* and *R. eriogynum* also produced many trusses of their brilliant scarlet flowers. One of the finest species to flower was *R. Taggianum* from Upper Burma. This was raised from seed collected by Forrest in 1925; the flowers are large,

tubular and ivory-white. Later in the summer another new Burmese species, *R. Kyawi*, bore large trusses of bright scarlet flowers. The large specimen of the Chilean Honey Palm, *Jubaea spectabilis*, transplanted in the summer of 1938, has not only received no check from the move, but shows the benefit of a change in the increased vigour and richer colour of the young growth.

The Acacias were undamaged by fogs and made a fine display of flower from January until the end of April. Other plants of interest which flowered well were *Luculia gratissima*, *L. Pinceana*, *Prunus campanulata*, *Camellia reticulata* and *C. saluenensis*.

Conditions from November onwards were made very difficult by cold winds and frost entering the houses, owing to the destruction of glass through enemy action. Though the extensive damage was repaired as quickly as possible, a few specimens suffered from frost, and probably many of the older tree Rhododendrons will be found to have suffered considerably in course of time. The collection of half-hardy trees and shrubs in the sheltered recesses outside the house, which in ordinary winters are sufficiently protected, suffered severely from the hard frosts early in the year, especially those from Australia, New Zealand, South America, California and the Himalayas. Old-established plants of *Olearia* (many species), shrubby *Senecios* from New Zealand, and all the species of *Leptospermum* were killed, and also a large specimen of *Ozothamnus antennarius*, over 30 years old, which was considered to be the hardiest Australian plant in this country.

TROPICAL DEPARTMENT.—No new work or extensive alterations have been possible during the year, the safeguarding of the collections during the later part of the year when the glasshouses were damaged being the chief concern. Many tropical plants in the Palm House have been killed, but thanks to the mild winter, the death roll, considering the amount of glass broken, was comparatively slight. Important economic plants have been propagated, and fairly large stocks of *Derris elliptica*, *Licania rigida*, *Theobroma Cacao* and several species of *Musa* have been raised.

Among plants of special interest which flowered during the year were *Streptocarpus Vandeleuri*, a native of South Africa, presented by the John Innes Horticultural Institution, *Dendrobium Kingianum*, *D. Fairfaxii*, *D. delicatum*, *D. aemulum*, and *D. gracilicaule*, all charming species of orchids collected by Mr. F. A. Weinthal in Australia. *Theobroma Cacao* var. *Foresteri* and *Piper nigrum* fruited well in the Economic House.

The Tropical Water Lily House (No. 15) was badly damaged by blast from a bomb which fell some distance away, and was out of use all the winter. The broken vertical lights have been replaced by thick cellophane (March, 1941), and the house is now in normal use.

HERBACEOUS DEPARTMENT.—In the Rock Garden, a few minor improvements and alterations were made. Despite the hard

weather very few plants were lost, though some, including a few shrubs, native of the warmer regions, were killed. Many plants flowered exceptionally well, especially the Primulas, *Meconopsis*, Penstemons, and several species of *Gentiana*. Bulbous plants also made a fine display in the Alpine House, the species of *Fritillaria* and Tulips being particularly good.

In the Iris Garden, beds were re-soiled and some of the newer varieties were planted.

Plants of special interest which flowered were *Scutellaria baicalensis* (Siberia), *Schizocodon macrophylla* (Japan), an attractive plant with large pink bell-shaped flowers, *Callirhoë involucrata* (North America), *Brittonastrum mexicanum*, raised from seed sent by Mr. E. K. Balls from Mexico, and *Lathyrus splendens*.

DECORATIVE DEPARTMENT.—The displays of spring and summer bedding plants were up to the standard of normal times, but the severe weather in the early months of the year resulted in the failure of most of the Wallflowers, *Myosotis* and Aubrietias. The Tulips, however, were good. Many roses in the Rose Garden, especially some of the hybrid Teas, suffered severely from the frost. Among the Lilies, *L. Marhan*, *L. auratum* var. *platyphyllum* and *L. Henryi* made a fine display.

In the conservatory *Prostanthera Sieberi* flowered profusely for several weeks, and received an award of merit when shown before the R.H.S. Floral Committee on April 2nd, 1940.

In connection with the "Grow More Food Campaign" a ten-rod demonstration plot was made near the Palace (see Annual Review for 1939). Demonstrations on soil preparation, arrangement and planting of crops, were given monthly. These proved popular with the general public. Produce grown on the plot was sent to the Royal Hospital, Richmond, and to the Kew and Richmond Evacuees' centre. The value of the produce came to over £12, which slightly exceeded the cost of planting and maintenance.

RAINFALL.—Rainfall recorded at the Royal Botanic Gardens, Kew, during 1940 :—

	Inches		Inches
January	... 2.33	July	... 2.46
February	... 1.62	August	... 0.06
March	... 3.15	September	... 1.44
April	... 1.60	October	... 2.62
May	... 1.21	November	... 6.65
June	... 0.95	December	... 1.23

Total 25.32 inches.

The total for 1939 was 28.50 inches.

Museums

Museums No. I and No. IV suffered a good deal from enemy action, the damage being mainly broken windows. Much of

the spirit material and the more valuable exhibits had been removed. The pictures in the Marianne North Gallery had all been stored away before the building was damaged by blast from a bomb which fell in the Kew Road.

Among special exhibits displayed in Museum III, the following may be mentioned :—

The importance of the Soy Bean in War Economics, and the uses of desiccated coconut, particularly with regard to confectionery. For these exhibits trade firms contributed most liberally.

Early in the year, in connection with the Model Allotment nearby, and for the benefit of allotment holders, wax models of various kinds of vegetables were exhibited; living examples of common garden pests and diseases of vegetables were also staged with instructions as to their prevention or cure.

A number of photographs showing the effects of the remarkable ice storm in January on trees and shrubs in the west country were kindly supplied by Mr. W. R. Price, Mr. R. C. B. Gardner and Mr. T. Thomson.

Miscellaneous enquiries related to the use of certain weed seeds (screenings from cereals) in poultry rations; livestock poisoning through excessive feeding of charlock seed; the use of various little-known vegetable products (e.g., *Montbretia* corms) as food for livestock; and many enquiries were received about fibres and paper-making materials, such as Ramie, wheat and rye straw, and Spanish reed (*Arundo Donax*).

Special assistance has been given to a Dutch national who is producing in this country high-grade artists' charcoal from home-grown wood, and also elder pith, both of which were mainly imported.

Advice has been given on the cultivation of Drug Plants to correspondents in Great Britain and the Empire, especially India, Kenya and Canada. Among the more important drugs dealt with were Belladonna, Henbane, Stramonium, Digitalis, Squill, Cascara and Ergot. A member of the staff attended conferences on the cultivation of drug plants held by the Ministry of Health. (A special Vegetable Drugs Committee has since been formed, upon which Kew is represented by the Director.) The co-operation of the Boy Scouts Association was obtained in the collection of *Colchicum* corms for cultivation at Kew, to serve as a reserve of this valuable drug plant. Owing to the dry season the work of collection was arduous, but the Scouts showed great keenness, and about one-third of an acre has been planted with the corms.

Many enquiries concerning the value of substitute plant products were received. These included the use of horse chestnuts, acorns, hips and haws, and other seeds and fruits, as food for stock, and the possibility of obtaining sugar from the sap of the Sycamore, *Acer pseudoplatanus*. A substitute for Agar-agar has been pre-

pared, which unfortunately is not suitable for bacteriological work, but may be of value for other purposes.

Information has been given on the sources and availability of light timbers, on coniferous oleoresins for the preparation of anti-freezing dope for aeroplanes ; timbers and other products for the manufacture of a self-sealing boat ; adhesives for hand grenades, etc.

A member of the staff has made a special study during the year of the different kinds of hedge and barrier plants (live fences) utilized in warm countries throughout the world. This has been stimulated by the increasing importance now attached to certain types of hedge in soil erosion control and by the fact that wire fences are less easy to procure and more expensive owing to the war. Some 400-500 species have been recorded in cultivation in tropical and sub-tropical countries for this purpose, about half of which are spinous.

Among contributions to the Museums in 1940 are the following :—

Mr. G. P. Madden, Bovey Tracey : Section of trunk of a fine specimen of *Eucalyptus globulus*, together with photographs of the tree before the great frost, which caused its death, and after felling. Also three hand-made boxes of native workmanship containing hand specimens of Ceylon timbers.

Mr. R. C. B. Gardner, Stratford-on-Avon : photographs of damage caused by the ice-storm in the west of England in January.

Dr. D. Guthrie, 35 Drumsheugh Gardens, Edinburgh : photograph of the " Tree of Hippocrates," *Platanus orientalis* Linn., on the island of Cos.

Messrs. Pitman, Ltd., Vitaland, Four Oaks, Warwickshire, and Messrs. Soy Foods, Ltd., Rickmansworth : Soy Bean products.

Mr. W. R. Price, Hon. Sec., Cotteswold Naturalists' Field Club : photographs of ice-storm.

Mr. H. N. Ridley, Kew : two walking-sticks with carved heads from Timor Laut ; walking-stick of *Borassus*.

Messrs. Salamon and Seaber, Oak Avenue, Hampton, Middlesex : sample of Greek Thyme (*Thymus capitatus*).

Mrs. T. E. Stephenson, 75 Carlisle Mansions, Westminster : 20 water-colour paintings of tropical flowers at Singapore—now forming an attractive exhibit in No. III Museum.

Miss E. Thompson, Museums Staff, Kew : very old example of a Meerscham pipe.

Mr. T. Thomson, University College of North Wales, Bangor : photographs of damage caused by the ice-storm in the Ceiriog District, Denbighshire.

Messrs. J. H. Vavasour and Co., Ltd., Ceylon House, E.C.3 : samples of desiccated coconut and manufactured sweets and biscuits from other firms ; sample of Ceylon copra and coconut oil.

Jodrell Laboratory

The greater part of the work of the Laboratory during 1940 was concerned with investigations on economic plants and plant products of many kinds. Amongst material submitted for identification were dandelion and chicory roots, a tea substitute, and other drugs and foods, some of which were captured in the operation of the blockade of enemy countries. Samples of watchmaker's pegwood, artist's charcoal and elder pith were also examined microscopically. These materials, which have hitherto been imported, can now be prepared in this country, and a small industry has been started.

An investigation was carried out, in collaboration with the National Physical and Chemical Laboratories and the Imperial Institute, of the mechanical properties of the fibre from nettle stems (*Urtica dioica*) and other native plants, and of methods of extraction. The nettle fibre has been found to be suitable for the manufacture of high-grade paper, and possibly of textiles, while the leaves are commercially valuable for the extraction of chlorophyll. Arrangements were made for the extensive collection of this abundant raw material during 1941.

The preparation of a new work on the Vegetative Anatomy of the Dicotyledons has continued steadily. An account of the work done at Kew in recent years on the protection of certain greenhouse plants from fog and atmospheric pollution has been prepared, and will be published in the Annals of Applied Biology.

The number of visitors working in the Laboratory was of course much smaller than usual. Amongst others were Dr. C. A. Pratt (Economic Botany and Ecology), Dr. L. Portheim (Growth-substances and the Cultivation of Cacti in Water), Dr. Bhaduri (Cytology), and Mr. E. J. Hewitt (Growth-substances).

Herbarium and Library

During 1940 the ordinary work of the Herbarium was seriously hindered by war-time conditions. It had been decided that as many as possible of the type specimens should be removed to a place of safety, and the work of locating and extracting the types, which had begun in 1939, took up a great part of the time of the whole scientific staff throughout most of the year. In addition, the fire-fighting and first-aid organizations had to be maintained.

With these extra duties and interruptions, and with several members of the staff engaged in military or other war service, there was little time for ordinary work. In spite of this, small collections were identified and certain items of research were completed or kept in progress. The compilation of Supplement X of the Index Kewensis was continued, and the Supplement to Pritzel's Index Londinensis, covering the years 1929-1935, was completed,

the two volumes comprising the Supplement being published in January, 1941.

The location and extraction of type specimens proved a very heavy task. In selecting specimens the term "type" was interpreted in a wide sense so as to include co-types and type numbers. Occasionally, plants of exceptional interest, which were not types, were also extracted. Owing to the presence of synonyms, misplaced sheets, and other unexpected difficulties, it was usually necessary to examine every sheet in the covers. The work was carried out on the basis of the main geographical divisions in which the specimens are arranged, with the exception of certain groups dealt with by specialists. In order to avoid overlapping, botanists started at different selected points in the three wings. Special strong folders, with red margins easily seen on opening the cabinets, were employed, to simplify the process of extraction after the selection of sheets had been completed. Some idea of the magnitude of the task, and of the richness of the Kew Herbarium in type specimens, may be gathered from the fact that about 100,000 special covers were used for Wing B and about half of Wing C.

The increasing severity of night raids over London in the autumn made it clear that the safeguarding of type specimens alone was not a sufficient precaution, and it was decided to move as much as possible of the priceless contents of the Herbarium and Library into the country. The work was begun in the late autumn, and almost the whole contents of the two older wings B and C—comprising the Dicotyledons from *Compositae* onwards and the Monocotyledons, the *Pteridophyta* and *Bryophyta*, together with many of the books, have now been safely removed. The following members of the staff have accompanied the specimens to their new homes, and are continuing as far as possible their regular work: Messrs. Sprague, Turrill, Summerhayes, Ballard, Hubbard, Shaw, Nelves, and Miss M. L. Green.

Little new material has been received during the year, but so far as is known only one consignment has been lost en route. Apart from the breakage of a considerable number of windows neither the Herbarium building nor its contents have suffered any damage up to the present time (June, 1941).

II.—CONTRIBUTIONS TO THE FLORA OF THAILAND. ADDITAMENTUM LIV.*

Euphoria scandens *Winit et Kerr* (Sapindaceae—Sapindeae); species *E. obtusae* (Pierre) Rdlk. affinis, habitu scandente foliis minoribus distinguitur.

Frutex scandens; ramuli teretes, juventute subtiliter fusco-vulvini, cito glabrescentes. *Folia* paripinnata, 4-5-juga, 9-20 cm. longa; petiolus 1.7-3 cm. longus, teres, juventute fusco-puberulus,

* Continued from K.B. 1940, 186.

mox glabrescens ; rhachis similis, internodiis 1.5-2.3 cm. longis ; petioluli 1-1.5 mm. longi, puberuli ; foliola opposita vel alterna, in quoque jugo sursum gradatim majora, ea jugi imi ovalia, basi apiceque rotundata, interdum apice leviter emarginata, ad 3.5 cm. longa et 2.5 cm. lata, jugi summi obovata, basi acute cuneata, apice rotundata, ad 6.8 cm. longa, 3 cm. lata, chartacea, supra subnitida, glabra, subtus minute puberula praesertim ad costam nervosque, costa et nervis lateralibus utrinque conspicuis, rete venularum supra subtusque manifesto. *Panicula* terminalis, fusco-puberula, ad 18 cm. longa, ramulis patentibus ad 10 cm. longis ; pedicelli 3-4 mm. longi. *Sepala* 5, in alabastro leviter imbricata, ovata, extra puberula, circiter 1.75 mm. longa, 1.5 mm. lata. *Petala* esquamata, pilosula, saepius spathulata apice emarginata, interdum integra, 1-1.5 mm. longa. *Discus* 5-lobatus, puberulus. *Stamina* 7-8, filamentis 2.5 mm. longis basin versus pilosis. *Carpella* sat dense puberula. *Fructus* globosus, circiter 12 mm. diametro, stipitatus, stipite 2-3 mm. longo, epicarpio minute squamuloso, arillo statu vivo fragrante.

Brought from N.E. Thailand and cultivated in Bangkok, *Winit*.

This plant is not uncommonly cultivated in some of the provinces of Ubon and Rachasima. It is said to have been introduced from Cambodia, but is also reported to occur wild. Only cultivated specimens have been seen. Locally it is known as *Lamyai krua*, or the climbing Lamyai (*Euphoria Longana*). The first collection of this interesting plant was sent from Bangkok by Nai Noe. His specimens had considerably smaller leaflets than any seen since, and have not been used in drawing up the description.

***Dolichos fragrans* Kerr** (Leguminosae—Euphaseoleae) ; species *D. subcarnoso* Wight et Arn affinis, floribus fere duplo majoribus foliis deciduis differt.

Planta scandens ; caulis lignosus, fistulosus, striatus, appresse griseo-pubescent, demum glabrescens, internodiis 6-15 cm. longis. *Folia* sub anthesi vulgo delapsa, trifoliolata, petiolo communi circiter 6.5 cm. longo striato pubescente supra canaliculato suffulta ; stipulae mancae, pubescentes, valde striatae ; stipellae filiformes, pubescentes, 4 mm. longae ; foliola lateralia inaequilateralia, basi rotundata, apice subacuta, latere altero dimidiatim oblongo, altero dimidiatim ovato leviter trilobata, 8.5 cm. longa, 5.5 cm. lata, petiolulo 3 mm. longo ; foliolium terminale obovatum, basi rotundatum, 9.5 cm. longum, 7.5 cm. latum, a lateralibus circiter 2.5 cm. distans, omnia subcoriacea, supra parce strigosula, subtus dense fulvo-tomentosa, basi trinervia, nervis supra leviter impressis, subtus cum nervulis valde prominentibus. *Racemi* ex axillis foliorum delapsorum orti, 5-10-flori, omnino molliter pubescentes ; pedunculus communis 1-6 cm. longus, robustus, leviter striatus ; rhachis ad pedicellorum insertiones leviter tumida ; bractaeae

lineari-ovatae, 6 mm. longae, cito deciduae; pedicelli 0.8-1.5 cm. longi; bracteolae binae ovatae, 4 mm. longae, 3 mm. latae, ad calycis basin affixae. *Calyx* extra intusque sericeus; tubus 6 mm. longus; lobi inter se aequilongi, triangulares, 4 mm. longi, duo postici connati. *Corolla* violacea, fragrans (ex *de Schaunensee*); vexillum obovato-rotundatum, apice emarginatum, 3.2 cm. longum, 3 cm. latum, basi auriculis binis inflexis praeditum, in unguem 4 mm. longum abrupte attenuatum, paulo supra basin bicallosum; alae oblongo-obovatae, ungui 4.5 mm. longo incluso 3 cm. longae, altero latere paulo supra basin obscure unidentatae; altero latere basi truncato-auriculatae, apice rotundatae; carinae petala leviter falcata, unguiculata, basi unilateraliter auriculata, apice rotundata, paulo supra basin plica 3 mm. longa ornata. *Stamen* vexillare a ceteris liberum, basi utrinque inaequaliter hamatum, antheris similibus. *Ovarium* lineari-oblongum, puberulum, 2.2 cm. longum, basin versus leviter attenuatum, basi ipsa disco annulari 1 mm. alto cinctum; stylus curvatus, glaber, basin versus leviter incrassatus; stigma terminale capitatum, obscure bilobatum, margine pilosum. *Legumen* juvenile lineare, 13 mm. longum, 4 mm. latum, puberulum, 10-14-spermum, apice stylo persistente coronatum.

Doi Chiengdao, c. 1610 m., steep limestone peak, anti-clockwise climber now out of leaf, flower shades of violet, *Garrett* 1167 (type); *ibid.*, 900 m., open forest, lilac flowers, *Kerr* 2854; *ibid.*, *Put* 4480; *ibid.*, 1680 m., fragrant violet-coloured flowers, no leaves at anthesis, growing on limestone, *de Schauensee* 719708 (*Herb. Acad. Nat. Sc. Phil.*).

All the collections of this proposed species come from the limestone mountain, Doi Chiengdao, and all are without leaf except *Put* 4480, on which a single leaf fortunately remained. From this the description of the leaf is taken.

***Erycibe fecunda* Kerr** (Convolvulaceae-Erycibeeae); species e descriptione *E. elliptilimbae* Merrill affinis, infrutescentia pubescente fructu subgloboso distinguitur.

Frutex scandens, ramulis longitudinaliter rugosis glabris. *Folia* late elliptica, basi late cuneata vel rotundata, apice breviter obtuseque acuminata, 10.5-13.2 cm. longa, 6.0-9.7 cm. lata, coriacea, glabra, supra subnitida, sub lente minute puncticulata, subtus pallidiora minute puncticulata et foveolata, costa supra impressa subtus prominente, nervis lateralibus 4-5 paribus angulo 30° e costa ascendentibus leviter curvatis supra impressis subtus prominulis, reticulo supra obscure impresso subtus haud manifesto; petiolus 2-3 cm. longus, rugosus, interdum leviter puberulus, supra anguste canaliculatus. *Flores* non visi. *Infrutescentia* paniculata, axillaris et terminalis, ferrugineo-pubescent, ad circiter 6.5 cm. longa. *Calyx* fructifer extra pubescens, lobis suborbicularibus 3 mm. diametro. *Fructus* subglobosus siccitate nigro-brunneus,

minute verrucosus, circiter 10 mm. diametro, apice areola leviter depressa apiculum circumdante.

Nawngkai, Chaiyaburi, c. 200 m., large woody climber at edge of evergreen forest, *Kerr* 8535.

Erycibe hololobula *Kerr* (Convolvulaceae-Erycibeae); ab *E. magnifica* Prain foliorum margine haud revoluta floribus multo minoribus recedit.

Frutex scandens, ramis ramulisque teretibus, juventute fulvo-pubescentibus mox glabrescentibus. *Folia* oblongo-oblanceolata vel oblongo-elliptica, basi sensim cuneata, apice abrupte et breviter obtuse acuminata, ad 22.5 cm. longa et 9.5 cm. lata, subcoriacea, supra juventute fulvo-pubescentia, cito glabrescentia, nigro-brunnea, subtus ubique sat dense breviterque fulvo-pubescentia, costa supra leviter impressa subtus prominente, nervis lateralibus 9-11 paribus subparallelis intra marginem arcuato-anastomosantibus supra inconspicuis subtus prominulis, nervulis supra obscuris subtus subconspicuis; petiolus crassus, rugosus, pubescens, 8-10 mm. longus. *Cymae* glomeratae, subsessiles, pubescentes, in axillis foliorum vel in nodis defoliatis dispositae, 0.8-1.5 cm. longae. *Flores* subsessiles vel pedicellis ad 1.5 mm. longis suffulti. *Sepala* subaequalia, suborbiculata, extra dense pubescentia, circiter 2.5 mm. diametro. *Corollae* tubus circiter 4 mm. longus, extra adpresse pubescens; limbus extra inter lobulos pubescens, aliter glaber; lobuli subrhomboidei, integri, circiter 3 mm. longi et 2.5 mm. lati. *Antherae* circiter 2 mm. longae; filamenta triangularia, circiter 0.3 mm. longa. *Ovarium* dense pubescens; stigma conoideum, irregulariter sulcatum. *Fructus* immaturus ovoideus, apiculatus, sat dense breviterque brunneo-pubescens, calycis lobis patentibus haud adpressis.

Ranawng, Kraburi, in scrub, flowers pale yellow, *Kerr* 16371.

Erycibe Noei *Kerr* (Convolvulaceae-Erycibeae); species *E. Rabilii* *Kerr* affinis, sed foliis pro rata angustioribus, inflorescentia laxiore differt; necnon *E. elliptilimbae* Merrill affinis, a qua ramulis haud glabris foliis minoribus distinguenda.

Frutex scandens; ramuli pilis adpressis praesertim ad nodos sparse obsiti et plicis exilibus longitudinaliter notati. *Folia* elliptica vel oblongo-elliptica, basi rotundata vel late cuneata, apice breviter obtuseque acuminata, 8.4 cm. longa, 3.2 cm. lata, usque ad 11.5 cm. longa, 4 cm. lata, coriacea, glabra, vel interdum subtus pilis longis adpressis secus costam obsita, supra subnitida, subtus olivacea, minute puncticulata et foveolata, costa supra impressa subtus prominula, nervis lateralibus 5-7 paribus supra subtusque leviter impressis sed haud conspicuis, sub lente reticulo leviter impresso; petiolus 6-8 mm. longus, adpresse pubescens, longitudinaliter rugosus, supra canaliculatus. *Inflorescentia* terminalis et axillaris, racemiformis, e cymulis 2-5-floris composita,

ferrugineo-pubescent, pedunculo communi 8-18 mm. longo suffulta, cymulis breviter pedunculatis, tota ad 4.8 cm. longa. *Flores* pedicellati, pedicellis circiter 3 mm. longis. *Calyx* extra dense pubescens; sepala subaequalia, suborbiculata, circiter 2.5 mm. diametro. *Corollae* tubus circiter 2.5 mm. longus, glaber nisi extra superne pubescens; loborum pars inter lobulos extra dense adpresse tomentosa, intus cum lobulis glabra; lobuli subrotundati, margine inciso-serrati, circiter 2.5 mm. longi et lati. *Stamina* tubi basin versus affixa; antherae breviter acuminatae, 1.5 mm. longae; filamenta circiter 1.2 mm. longa, inferne leviter expansa, ad basin utrinque dente minuto praedita. *Ovarium* glabrum, circiter 2 mm. altum. *Fructus* ignotus.

Korat, Ban Chum Seng, flowers scented, *Noe* 210.

***Erycibe Rabilii* Kerr** (Convolvulaceae-Erycibae); species e descriptione *E. elliptilimbae* Merrill affinis, sed foliis pro rata latoribus, inflorescentia pubescente distinguenda.

Frutex scandens; ramuli primo angulares, mox plicis tenuibus longitudinaliter notati, glabri. *Folia* oblongo-ovata vel oblongo-elliptica, basi rotundata, apice breviter et obtuse acuminata, 8.2-15.7 cm. longa, 4.6-7.8 cm. lata, coriacea, glabra, subtus minute puncticulata et minute irregulariterque foveolata, costa supra impressa subtus prominente, nervis lateralibus saepius 5 paribus, angulo 50° e costa ascendentibus supra impressis subtus prominulis, reticulo supra subtusque leviter impresso; petiolus 1.5-1.9 cm. longus, longitudinaliter rugosus, supra anguste canaliculatus. *Inflorescentia* axillaris et terminalis, ad 5 cm. longa, conferte multiflora, ferrugineo-pubescent, subsessilis vel pedunculata, pedunculo ad 1.2 cm. longo. *Flores* pedicellati, pedicellis circiter 2 mm. longis. *Calyx* extra dense ferrugineo-pubescent; lobi subaequales, suborbiculares, circiter 2.5 mm. diametro. *Corollae* tubus 4 mm. longus; lobi 6 mm. longi, extra inter lobulos dense adpresse pubescentes, aliter glabri; lobuli siccitate nigrescentes, subrhomboidei, margine inciso-serrati, 5 mm. lati. *Stamina* tubi basin versus affixa; antherae acuminatae, 1.8 mm. longae; filamenta inferne leviter expansa, 1.8 mm. longa. *Ovarium* glabrum, circiter 2 mm. altum. *Fructus* non visus.

Tungsong, Kao Namnom Keo, flowers yellow, very fragrant, *Rabil* 225.

Erycibe fecunda, *E. Noei*, *E. Rabilii* and probably *E. elliptilimba* Merrill form a group of closely allied species, differing considerably, however, in the size, shape and venation of their leaves.

***Lettsomia* Roxb.**

Roxburgh's genus *Lettsomia*, first fully published in 1824 (Roxb. Fl. Ind., ed. Carey et Wall, 2, 75), is antedated by *Lettsomia* Ruiz et Pav. (Prodr. 77, t. 14—1794), a genus of Theaceae, against which *Freziera* Sw. has been conserved. *Lettsomia* Roxb. is, it is

understood, to be put forward for conservation at the next Congress. In the expectation that this will be allowed, Roxburgh's name is retained here.

Lettsomia brachypoda *Kerr* (Convolvulaceae-Argyreieae) ; species *L. bellae* C. B. Clarke affinis, sed foliis pro rata latioribus, foliorum indumento diverso, antheris vix exsertis recedit.

Suffrutex, habitu ignoto ; caulis sat robustus, teres, lignosus, dense et breviter lanato-tomentosus, tomento cinereo vel pallide brunneo. *Folia* late ovata, suborbicularia vel fere reniformia, basi leviter cordata, apice rotundata, saepius emarginata, 3 cm. longa, 4 cm. lata ad 7 cm. longa, 8.2 cm. lata, caulis apicem versus saepius minora, supra viridi-brunnea, subtus sordide crenea, pagina superiore dense et adpresse sericeo-villosa, pagina inferiore densissime lanosa, costa cum nervis lateralibus supra valde impressa, subtus valde prominente, nervis transversis supra obscuris subtus prominulis ; petiolus longitudine variabilis, 1.5-4.6 cm. longus, indumento ejus caulis simili vestitus, supra sulcatus. *Inflorescentiae* axillares, plerumque caulis summitatem versus dispositae, subcapitatae, pluriflorae, dense lanato-tomentosae ; pedunculi vulgo petiolis multo breviores, robusti, 0.8-2.5 cm. longi ; bractee forma variabiles, quattuor exteriores calyces superantes, late obovatae, obtusae, circiter 11 mm. longae, 14 mm. latae, demum deciduae, interiores ellipticae, acutae vel subacutae, circiter 11 mm. longae, 5 mm. latae, indumento eo bractearum exteriorum longiore et patentiore vestitae. *Flores* sessiles. *Sepala* inaequalia, extra longe et dense sericeo-tomentosa, intus glabra ; duo exteriora late elliptica, subacuta, circiter 8 mm. longa, 5 mm. lata ; tria interiora linearia vel lineari-elliptica, circiter 4.5 mm. longa, 1.5 mm. lata. *Corolla* infundibuliformis, circiter 17 mm. longa ; tubus 12 mm. longus, extra glaber, intus ad insertionem staminum papillosus ; lobi oblongi, apice leviter emarginati, circiter 5.5 mm. longi, extra dense et longe albido-pilosi. *Stamina* 6 mm. supra basin tubi inserta ; antherae 2.5 mm. longae ; filamenta 7 mm. longa, basi triangulariter dilatata et papillosa, ceterum glabra. *Discus* 0.7 mm. altus. *Ovarium* 1.5 mm. altum, glabrum. *Fructus* subsuccosus, globosus, rufescens, circiter 5 mm. diametro.

Korat, Hui Taleng, *Put* 2190.

Lettsomia breviscapa *Kerr* (Convolvulaceae-Argyreieae) ; *L. longifoliae* Coll. et Hemsl., ut videtur, proxime affinis, foliis et bracteis latioribus petiolis brevioribus differt.

Planta volubilis ; caulis teres, leviter striatus, adpresse pubescens, internodiis 5-11 cm. longis. *Folia* oblonga vel oblongo-elliptica, basi longe et acute cuneata, apice rotundata, emarginata, margine obscure undulata, ad 11.7 cm. longa, 3.8 cm. lata, papyracea, supra pilis brevibus basi bulbosis strigosa, subtus pilis similibus

paucioribus pubescentia molliore intermixta vestita, supra costa cum nervis lateralibus plana vel leviter prominula, subtus prominente, nervis lateralibus 8-10 paribus fere rectis nisi marginem versus valde arcuatis; petiolus gracilis, 1.7-2.5 cm. longus, pubescens. *Inflorescentia* axillaris, conferte cymosa, pluriflora, foliis multo brevior; pedunculus 0.5-1.2 cm. longus; bracteae exteriores foliosae, sessiles, ovatae, ad 3.8 cm. longae, 3.5 cm. latae, indumento ejus foliorum simili vestitae; bracteae interiores sensim minores. *Flores* sessiles vel subsessiles, singillatim florentes. *Sepala* subaequalia, lanceolata, acute acuminata, glabra, vel pilis paucis adpressis basi et apice induta, circiter 14 mm. longa et 5.5 mm. lata. *Corolla* subcampanulata, alba (ex *Put*), circiter 5 cm. longa, extra intusque glabra. *Stamina* aequalia, 6 mm. supra basin tubi inserta, inclusa; antherae circiter 5.5 mm. longae; filamenta 15 mm. longa, glabra, leviter complanata, basi triangulariter dilatata. *Discus* margine obscure undulatus, circiter 1 mm. altus. *Ovarium* glabrum, circiter 2.5 mm. altum; stylus 22 mm. longus. *Fructus* ignotus.

Nakawn Sawan, Hua Wai, *Put* 4045.

***Lettsomia calcicola* Kerr** (Convolvulaceae-Argyreieae); species *L. sphaerocephalae* Prain affinis, foliis minoribus, pedunculis multo minoribus, inter alia, differt.

Planta procumbens; caulis teres, gracilis, pubescens, internodiis vulgo 4.5-7 cm. longis. *Folia* oblongo-ovata vel oblongo-lanceolata, basi rotundata interdum obscure cordata, apice subacuta vel obtusa, minute mucronata, 3.8 cm. longa, 1.3 cm. lata ad 5.4 cm. longa, 1.7 cm. lata, subcoriacea, supra siccitate viridi-brunnea, subtus pallidiora, cineracea, supra scabro-strigosa, subtus dense adpresse hirsuta, costa supra impressa subtus prominula, nervis lateralibus 6-7 paribus supra obscuris subtus leviter prominulis fere rectis marginem versus evanescentibus; petiolus 0.6-1 cm. longus, strigoso-pubescens. *Inflorescentia* axillaris, subcapitata, pluriflora, breviter pedunculata; pedunculus petiolo aequilongus vel brevior, indumento ejus caulis simili vestitus; bracteae exteriores sessiles, ovatae, ad 25 mm. longae, 20 mm. latae, extra dense adpresse pubescentes, bracteae interiores sensim decrescentes et tenuius pubescentes. *Flores* sessiles vel subsessiles, singillatim florentes. *Sepala* subaequalia, oblongo-ovata, acute acuminata, glabra nisi ad acumen pilis paucis adpressis induta. *Corolla* subcampanulata, alba, circiter 3.5 cm. longa, extra ad loborum apicem parcissime hirsuta aliter glabra. *Stamina* 5 mm. supra basin tubi inserta, inclusa; antherae circiter 4 mm. longae; filamenta 14 mm. longa, basin versus breviter dilatata et minute papillosa, aliter glabra. *Discus* circiter 1.3 mm. altus, margine undulatus, ovarium aequans. *Ovarium* glabrum; stylus 21 mm. longus. *Fructus* ignotus.

Kanburi, Kao Tawng, c. 100 m., trailing on ground in open deciduous forest on rocky limestone hill, *Kerr* 19658.

Lettsomia Collinsae (*Craib*) *Kerr*, comb. nov. *Rivea Collinsae* Craib in Kew Bull. 1916, 266.

The material now available shows that this plant is a *Lettsomia* rather than a *Rivea*.

Lettsomia ionantha *Kerr* (Convolvulaceae-Argyreieae); a *L. strigosa* Roxb., cui affinis, indumento brevior pilis longis patentibus deficientibus, inflorescentia laxiore bracteis longioribus angustioribus distinguenda.

Planta volubilis; caulis teres vel leviter complanatus, sat dense adpresse fusco-pubescent, internodiis vulgo circiter 20 cm. longis. *Folia* lata ovata, valde cordata, sinu late aperto auriculis rotundatis, apice breviter acuteque acuminata, margine obsolete undulata, ad 13.7 cm. longa, 12.5 cm. lata, supra pilis brevibus basi bulbosis adpresse hirsuta, subtus molliter adpresse pubescentia, costa supra prominula subtus prominente, nervis lateralibus 8-9 paribus supra prominulis subtus prominentibus marginem versus valde arcuatis; petiolus 5-9 cm. longus, indumento caulis indutus. *Inflorescentia* axillaris, capitato-cymosa, circiter 3-6-flora, fusco-pubescent, folia saepius excedens; pedunculus gracilis, 8-16 cm. longus; bractee exteriores anguste lanceolatae, ad 27 mm. longae et 8.5 mm. latae, interiores minores et pro rata angustiores, saepe lineares. *Flores* subsessiles. *Sepala* ovata, acuta, extra longe hirsuta, inaequalia, exteriora 12 mm. longa, 4.5 mm. lata, interiora 9 mm. longa, 3 mm. lata. *Corolla* campanulata, violacea (ex *Garrett*), 5 cm. longa, extra longe hirsuta, intus glabra. *Stamina* inclusa, parum inaequalia, 6 mm. supra basin tubi inserta; antherae lineares, minute apiculatae, 5 mm. longae; filamenta 15-20 mm. longa, parte basali circiter 7 mm. longa sensim dilatata et pilis brevibus brunneo-capitatis vestita. *Discus* annulatus, margine undulatus, circiter 1 mm. altus. *Ovarium* glabrum, 2 mm. altum; stylus 30 mm. longus. *Fructus* non visus.

Doi Pa Kao, south-west slope, circiter 1550 m., *Garrett* 738.

Lettsomia roseopurpurea *Kerr* (Convolvulaceae-Argyreieae); species ex affinitate *L. Kunstleri* Prain, indumento tenuiore pedunculis brevioribus distinguitur.

Suffrutex volubilis; ramuli subteretes vel parum angulati, pilis fulvis erectis adpressis parce hirsuti. *Folia* ovata, basi leviter cordata vel rotundata, apice obtusa, apiculata, margine integra, plana, 6.2 cm. longa, 4.7 cm. lata ad 13.3 cm. longa, 10 cm. lata, subcoriacea, siccitate supra brunneo-viridia, subtus multo pallidiora, griseo-brunnea, supra minute et crebre papillata, juventute parce hirsuta densius ad costam, costa excepta cito glabrescentia, subtus secus costam nervos et marginem sat dense ceterum parce adpresse fulvo-hirsuta, costa supra impressa subtus prominente, nervis lateralibus 6-9 paribus procurvis ascendentibus prope marginem

anastomosantibus, supra tenuiter elevatis subtus prominentibus, nervis transversis subtus prominulis irregulariter scalariformiter dispositis; petiolus supra anguste sulcatus, adpresse hirsutus, 1.5-7.5 cm. longus. *Inflorescentia* axillaris, cymosa, pedunculata, omnino adpresse fulvo-hirsuta, saepius foliis parum brevior; pedunculus 4-8 cm. longus; rami breves, 0.4-0.9 cm. longi; bractee ovatae, circiter 2 mm. longae, cito deciduae; pedicelli 0-4 mm. longi. *Sepala* extima late lanceolata, obtusa, extra dense fulvo-hirsuta, intus glabra, 4 mm. longa, 3.5 mm. lata, intima late ovata, extra medio dorso hirsuta margine glabra, 4 mm. longa, 5 mm. lata. *Corolla* infundibuliformis, breviter 5-lobata, limbo roseo ad faucem purpureo, extra pilis longis fulvis secus petalorum dorsum hirsuta, intus glabra, circiter 2.5 cm. longa. *Stamina* subaequalia, inclusa, 4 mm. supra basin tubi inserta; antherae oblongae, hastatae, 3.5 mm. longae; filamenta glabra, basin versus leviter dilatata, 11 mm. longa. *Discus* leviter 5-lobatus, circiter 1.2 mm. altus. *Ovarium* glabrum, circiter 2 mm. altum, in stylum sensim attenuatum; stylus 15 mm. longus, glaber; stigma biglobosum. *Fructus* ignotus.

Chumpawn, Kao Tong, circiter 700 m., woody climber in ever-green forest, flowers pink with purple centre, *Kerr* 11531.

Lettsomia stenophylla *Kerr* (Convolvulaceae-Argyreieae); species inter congeneros ob folia linearia, inflorescentiam brevipedunculatam paucifloram facile distinguenda.

Planta repens. *Radix* lignoso-tuberosa, fusiformis. *Caulis* sat gracilis, strigosus, internodiis foliis vulgo brevioribus. *Folia* anguste linearia, basi rotundata, apice obtusa minute mucronata, 45-60 mm. longa, 3.5-5 mm. lata, supra glabra nisi secus costam et ad marginem strigosa, subtus strigosa, costa pagina utraque prominula, nervis lateralibus obscuris; petiolus strigosus, 3-7 mm. longus. *Inflorescentia* axillaris, strigosa, saepius uniflora, raro biflora; pedunculus ad 3 mm. longus; pedicellus basi bracteolis binis ovatis circiter 6 mm. longis, 2 mm. latis praeditus, 4-5 mm. longus. *Sepala* subaequalia, ovata, acuta, circiter 8 mm. longa, 3 mm. lata, in fructu accrescentia, extra dense strigosa, intus glabra. *Corolla* anguste campanulato-infundibularis, extra sat dense strigosa, 4.3 cm. longa; limbus obscure lobatus, purpureus; tubus albus, intus ad staminum insertionem pilorum rigidiusculorum erectorum cingulo praeditus. *Stamina* parum inaequalia, inclusa, 3 mm. supra basin tubi inserta; filamenta 5-8 mm. longa, basi triangulariter dilatata et dense papilloso-pilosa; antherae circiter 5 mm. longae. *Discus* anguste cupularis, margine leviter sinuatus, circiter 0.5 mm. altus. *Ovarium* glabrum, 2 mm. altum, in stylum sensim attenuatum, biloculare, seminibus duobus in quoque loculo. *Fructus* vix maturus, globosus, circiter 7 mm. diametro, ut videtur monospermus et indehiscens, pedicello incrassato suffultus; semina ovoidea, glabra, minute reticulata, circiter 5 mm. longa.

Chiengmai, Me Teng, circiter 700 m., trailing on ground in open grassy forest, *Kerr* 6490.

In habit this plant bears a strong resemblance to *Ipomoea popahensis* Coll. et Hemsl., which may also prove to be a *Lettsomia*, differing chiefly in its broader non-acuminate sepals.

Lettsomia versicolor *Kerr* (Convolvulaceae-Argyreieae) ; *L. Maingayi* C. B. Clarke affinis, foliis cordatis haud glabrescentibus, inflorescentia laxiore distinguitur.

Suffrutex volubilis ; caulis teres, striatus, pubescens, internodiis vulgo 2.5-5 cm. longis. *Folia* ovata, basi cordata, apice sat subito et acute acuminata, 5.6 cm. longa, 3.7 cm. lata ad 7.6 cm. longa, 4.7 cm. lata, papyracea, supra scabro-strigosa, subtus dense adpresse hirsuta, costa cum nervis lateralibus supra leviter prominula subtus prominente, nervis lateralibus 8-9 paribus patulis marginem versus arcuatis ; petiolus sat robustus, pubescens, 1-1.3 cm. longus. *Inflorescentia* axillaris, conferte cymosa, pluriflora, pubescens ; pedunculus robustus, 1-1.7 cm. longus, ramulis 0.5-0.8 cm. longis ; bracteae exteriores oblanceolatae, acute acuminatae, extra pubescens, circiter 3.5 cm. longae, 1.4 cm. latae, interiores angustiores aliter similes ; pedicelli circiter 3-4 mm. longi. *Sepala* subaequalia, elliptica, apice rotundata, circiter 12 mm. longa, 9 mm. lata, exteriora extra sparse adpresse hirsuta, interiora glabra. *Corolla* subtubiformis, medio sensim dilatata, apicem versus parum constricta, 5 cm. longa, extra parte superiore sparse hirsuta ; tubus albus, limbus purpureo-maculatus. *Stamina* 8 mm. supra basin tubi inserta, inclusa ; antherae 5 mm. longae ; filamenta parum inaequalia, circiter 18 mm. longa, basi triangulariter dilatata, apice partis dilatatae glandulifera aliter glabra. *Discus* circiter 0.7 mm. altus, margine vix undulatus. *Ovarium* 2 mm. altum. *Fructus* ignotus.

Krabin, Wattana, circiter 100 m., climbing on bushes in scrub, *Kerr* 9786.

Ipomoea hylophila *Kerr* (Convolvulaceae-Ipomoeae) ; species *I. nanae* Coll. et Hemsl. affinis, indumento diverso, corolla extra glabra, staminibus aequalibus distinguitur.

Suffrutex scandens ; caulis ad circiter 2 mm. diametro, inferne lignosus, teres, striatus, juventute breviter pubescens pilis paucis strigosis intermixtis, internodiis 2-6 cm. longis. *Folia* oblonga vel oblongo-oblanceolata, basi rotundata vel late cuneata, apice rotundata vel abrupte et breviter acuminata, 3.5 cm. longa, 1.3 cm. lata, ad 6.8 cm. longa, 3.2 cm. lata, papyracea, supra sparse breviterque pilosa praecipue ad costam nervosque, subtus pilis adpressis hirsutiora, costa nervisque supra prominulis subtus prominentibus, nervis lateralibus 7-9 paribus fere rectis subparallelis ad marginem arcuatis et anastomosantibus ; petiolus gracilis, pubescens, 0.6-2 cm. longus. *Inflorescentia* axillaris, 1-3-flora, foliis brevior,

sessilis vel breviter pedunculata; pedunculus ad 3 mm. longus, pubescens; bractee lineares, pubescentes, ad 4 mm. longae; pedicelli pubescentes, striati, superne incrassati, circiter 5 mm. longi. *Sepala* parum inaequalia, extra intusque pubescentia; exteriora lanceolata, obtusa, circiter 13 mm. longa, 6 mm. lata; interiora ovata, subacuta, circiter 11 mm. longa, 6 mm. lata; statu frutescente omnia accrescentia et patentia. *Corolla* purpurea, tubulo-campanulata, circiter 5 cm. longa, limbo leviter 5-lobato, extra intusque glabra. *Stamina* aequalia, 5 mm. supra basin corollae inserta; filamenta 15 mm. longa, basi dilatata et parce pilosa; antherae oblongae, minute apiculatae, 3.5 mm. longae. *Discus* annularis, circiter 1 mm. altus. *Ovarium* conicum, glabrum, circiter 2.5 mm. altum; stylus filiformis, 23 mm. longus, glaber. *Fructus* immaturus globosus, 6 mm. diametro.

Raheng, Ban Pa Yang, c. 100 m., climbing on undergrowth in deciduous forest, *Kerr* 4579.

When mature fruit is known, it is possible that this species, probably also *I. nana*, may have to be transferred to *Lettsonia*. Both species have rather the facies of that genus.

Ipomoea soluta *Kerr* nom. nov.—*I. campanulata* C. B. Clarke in Fl. Brit. Ind. 4, 211, excl. var. *illustris* C. B. Clarke, et auct. al., non Linn. Sp. Pl. 160 (1753).

This species has long borne an untenable name, *Ipomoea campanulata*. Under that name Linnaeus described what was evidently not a convolvulaceous plant. Moreover, as Hallier f. in Meded. Rijksherb. Leiden 1. 26 has pointed out, the specimen in the Linnean Herbarium named *Ipomoea campanulata* is *Thespesia populnea* (Linn.) Soland., to which the Linnean description of *I. campanulata* more nearly applies. *Ipomoea campanulata* must therefore, as stated by van Ooststroom (*Blumea* 3, 568), be treated as a synonym of *Thespesia populnea*. In perpetuating the Linnean name most authors have relied on the citation of Adamboe, Rheede Hort. Mal. 11, t. 56, which is probably *Stictocardia tiliacifolia* (Desr.) Hall. f., and which bears some resemblance to our plant. C. B. Clarke in Flor. Brit. Ind. 4, 211 used the name *I. campanulata* for our species, but he made a variety of it, *illustris*, for a larger-flowered more glabrous plant. Prain, in Bengal Plants 2, 735, separated the variety *illustris* as a distinct species, confined to the sea-shore; but he did not propose any change of name for the inland plant, with which we are concerned. None of the synonyms usually given under *I. campanulata* applies solely to this inland plant, which must, therefore, be given a new name. It is suggested that a sheet from Herb. Dalzell, from Bombay, in Herb. Kew, be regarded as the type of *I. soluta*.

Merremia bambusetorum *Kerr* (Convolvulaceae-Convolvuleae); species prope *M. umbellatam* (Linn.) Hall. f. forsan ponenda, a qua

inflorescentia pauciflora longius pedunculata, floribus majoribus distinguenda.

Planta volubilis ; caulis teres, gracilis, tenuiter striatus, glaber, siccitate nigro-brunneus, internodiis 4-11 cm. longis. *Folia* oblongo-elliptica vel oblongo-ob lanceolata, apice acuminata, mucronulata, basi plus minusve cordata, auriculis interdum obscure dentatis, 5.5 cm. longa, 1.7 cm. lata, ad 11 cm. longa, 3 cm. lata, membranacea, siccitate supra nigro-brunnea, subtus pallidiora, glabra nisi supra secundum costam minute puberula, costa supra impressa subtus prominula, nervis lateralibus 7-9 paribus supra subplanis subtus prominulis, nervis transversis subparallelis cum rete venularum subtus conspicuis ; petiolus tenuis, supra anguste sulcatus et minute puberulus, 0.8-1.2 cm. longus. *Inflorescentia* axillaris, plerumque uniflora, interdum biflora, glabra ; pedunculus 3-4.5 cm. longus, petiolo multo crassior ; bracteae ovatae, circiter 0.75 mm. longae ; pedicelli minute verrucosi, superne incrassati, 1-1.6 cm. longi. *Sepala* subaequalia, concava, glabra ; exteriora obovata, obtusa, breviter apiculata, 12 mm. longa, 8 mm. lata ; interiora late elliptica, apice leviter emarginata et mucronulata, margine membranacea, 12 mm. longa et 9 mm. lata. *Corolla* infundibuliformis, pallide lutea, circiter 3.5 cm. longa, extra superne parce pilosa, intus infra staminum insertionem lineis papillois notata, vittis 5 mesopetalinis manifestis sed haud nigrescentibus. *Stamina* 5 mm. supra basin corollae inserta ; filamenta parum inaequalia, 8-10.5 mm. longa, paulo complanata, basin versus leviter et sensim dilatata et parce papillosa ; antherae 4 mm. longae, rectae ; pollen ellipsoideum, laeve. *Discus* circiter 1 mm. altus, leviter sinuatus. *Ovarium* conicum, glabrum, 2 mm. altum ; stylus glaber, 16 mm. longus. *Fructus* ignotus.

Krat, Kao Kuap, c. 400 m., climbing in bamboo forest, *Kerr* 17704.

In the absence of fruit this plant is referred to *Merremia*, though there seems no close affinity for it within that genus. Possibly it may belong rather to *Operculina* ; but a decision on this point must await the receipt of mature fruit. A collection, *Hancock* 39, from Mengtsze, Yunnan, is also referable to this species.

Porana bialata *Kerr* (Convolvulaceae-Poraneae) ; species *P. sinensi* Hemsl. affinis, floribus dimidio minoribus distinguenda.

Planta volubilis ; caulis teres, herbaceus, pubescens, demum glabrescens. *Folia* ovata, basi leviter cordata, ima basi breviter cuneata, apice parum acuminata, acuta, mucronulata, auriculis rotundatis, 5.4 cm. longa, 3.8 cm. lata ad 8 cm. longa, 5.8 cm. lata, papyracea, supra minute puberula praecipue ad nervos, subtus densius puberula, basi palmatim 5-nervia, subtus sub lente rete venularum manifesto ; petiolus teres, gracilis, puberulus, 1.5-3.5 cm. longus. *Inflorescentia* axillaris, racemiformis, vel rami apicem versus paniculatim disposita et bracteis foliosis praedita, ad 26 cm.

longa, pubescens ; bracteae inferiores interdum foliosae, superiores lineares, omnes cito deciduae ; pedicelli graciles, 3-8 mm. longi ; bracteolae 3, lanceolatae, acutae, 3-nerviae, 3-4 mm. longae, sepala simulantes et in epicalycis forma dispositae. *Sepala* valde inaequalia ; duo exteriora ovata, longe obtuseque acuminata, circiter 3.7 mm. longa, basin versus 1.5 mm. lata, extra puberula ; tria interiora multo minora, ovata, breviter et acute acuminata, glabra, 1.5 mm. longa, 1 mm. lata, sub anthesi intra sepala exteriora et bracteolas penitus occulta. *Corolla* infundibuliformis, circiter 10-12 mm. longa, subintegra, extra parce et minute puberula, intus glabra. *Stamina* inaequalia, 1 mm. supra basin corollae inserta, glabra ; filamenta 2.5-4.5 mm. longa, basin versus vix dilatata ; antherae circiter 1.5 mm. longae. *Discus* haud manifestus. *Ovarium* ovoideum, glabrum, circiter 0.7 mm. altum, ut videtur uniloculare, biovulatum ; stylus glaber, 6 mm. longus ; stigma integrum globosum. *Fructus* maturus sepalis scariosis accrescentibus valde inaequalibus circumcinctus, oblongus, glaber, circiter 7 mm. altus, 3 mm. crassus, apice stylo sicco coronatus ; sepala 2 exteriora valde elongata, oblonga, circiter 5 cm. longa et 1 cm. lata, basi contracta et contorta, apice rotundata, extra secus nervos minute et parce puberula, nervis 5 parallelibus utrinque elevatis inter se nervis transversis scalariformiter connexis longitudinaliter percursa ; 3 interiora oblanceolata, acuta, circiter 8.5 mm. longa, 4 mm. lata ; bracteolae etiam scariosae, vix auctae, 4-5 mm. longae, 1 mm. latae ; semen unicum, cotyledonibus valde plicatis.

Petchaburi, Me Prachan, climber with white flowers in scrub, *Winit* 406 ; Prachuap, Hui Yang, *Put* 3166 (type) ; Prachuap, Kan Kradai, *Put* 2326.

Winit 406 differs from the type in that the inner sepals have a few hairs on the outside near the tip, and the base of the corolla tube within, as well as the base of the filaments, is minutely and scantily papulose-puberulent. The description of the fruit has been drawn up from *Put* 2326.

***Porana sutepensis* Kerr** (Convolvulaceae-Poraneae) ; species *P. spectabili* Kurz affinis, foliis altius cordatis subtus canescentibus haud fulvo-tomentosis, calycis lobis fructiferis multo majoribus differt.

Planta volubilis, lignosa ; ramuli robusti, teretes, pubescentes, cortice leviter longitudinaliter plicato obtecti. *Folia* ovata, basi cordata sinu patulo lobis rotundatis, apice sat subito acute et anguste acuminata, 10 cm. longa, 7.3 cm. lata, ad 17 cm. longa, 13 cm. lata, chartacea, siccitate supra nigro-brunnea, subtus canescentia, supra minute puberula vel fere glabrescentia, subtus dense albido-tomentosa, nervis e basi 5, supra leviter impressis subtus prominentibus, nervis transversis subparallelis supra obscuris subtus prominulis ; petiolus sat robustus, tomentosus, 4-7 cm. longus. *Flores* non visi. *Infrutescentia* axillaris, racemiformis,

puberula, 12-38 cm. longa ; pedunculus communis 9-15 cm. longus ; pedicelli 1-1.5 cm. longi. *Fructus* maturus sepalis scariosis accrescentibus circumcinctus, oblongo-obovoideus, pilis albidis erectis adpressis dense hirsutus, circiter 10 mm. altus, apice stylo sicco hirsuto coronatus ; sepalia 3 exteriora oblongo-lanceolata, apice subacuta, parum inaequalia, 5.5 cm. longa, 1.1 cm. lata, ad 7.5 cm. longa, 1.6 cm. lata, utrinque puberula, nervis 5 inter se nervis transversis scalariformiter connexis longitudinaliter percursa ; 2 interiora lanceolata, 2.5 cm. longa, 0.4 cm. lata, apice longe sensimque attenuata ; bracteolae scariosae, lineares, acutae, circiter 10 mm. longae ; semen unicum, ovoideum, circiter 10 mm. longum, purpureo-brunneum, valde rugosum et minute foveolatum.

Doi Sutep, 900 m., evergreen forest, *Kerr* 2605.

We append the description of a new species of *Paraboea* collected by Mr. H. B. Garrett.

Paraboea glabrisepala *B. L. Burtt*, sp. nov. ; affinis *P. capitatae* Ridley sed bracteis majoribus glabris et sepalis glabris emarginatis valde distincta.

Herba caule brevi crasso 5 cm. longo dense foliato. *Petiolus* usque 16 cm. longus, pannoso-tomentosus, ima basi vaginatim dilatatus. *Lamina* oblonga, usque 15 cm. longa et 8.5 cm. lata, apice subrotundata, basi leviter cordata, margine crebre crenata, supra primum arachnoideo-tomentosa mox glabrata, subtus dense pannoso-tomentosa ; nervi laterales utrinsecus 7, ut costa supra impressi, subtus prominentes, nervis secundariis etiam conspicuis subtus prominulis. *Inflorescentiae* axillares, pedunculo communi nudo usque 28 cm. longo tenuiter piloso vel glabrescente. *Bractee* magnae, circiter 1.5 cm. longae et 1 cm. latae, plus minusve obovatae, tenues, glabrae, flores immaturos obtegentes. *Pedicelli* usque 1.5 cm. longi, sparse papilloso-muriculati. *Sepala* 5, ad basin libera, ovato-oblonga, 1.5 mm. longa et 1.25 mm. lata, apice obtusa emarginata, glabra, trinervia et inter nervos lineis duabus brunneis notata. *Corolla* ventricosa, tubo c. 1 cm. longo, lobis 5 (in vivo reflexis ?) 3 mm. longis rotundatis. *Stamina fertilis* duo, 1 mm. supra corollae basin inserta ; filamenta circiter 6 mm. longa, dimidio superiore contorta scabro-papillosa, infra glabra ; antherae plus minusve late reniformes, 1.5 mm. longae, 5 mm. latae, glabrae, inter se leviter cohaerentes. *Staminodia* 3, 2 mm. longa ; lateralia 2 mm., dorsale 0.75 mm. supra corollae basin inserta. *Ovarium* glabrum, cylindricum, 6 mm. longum, in stylum 3 mm. longum attenuatum ; stigma leviter et inaequaliter bifidum, papillosum.

THAILAND. Doi Chiengdao, steep slope above Ban Tam, on limestone rock, c. 600 m., flowers violet, 28th Aug. 1935, *Garrett* 1001.

III.—THREE NEW GRASSES FROM MEXICO.

W. HARTLEY.

Among the extensive collections made by Mr. G. B. Hinton in Mexico, and sent to Kew for determination, were the following new grasses :—

Zeugites sagittata Hartley, sp. nov., a *Z. latifolia* Hemsl. pseudopetiolis longioribus, laminis basi sagittatis, ramis paniculae gracilibus basin versus espiculatis, spiculis brevioribus late ovatis, glumis brevioribus, internodiis rhachillae brevissimis distinguenda.

Gramen perenne, circa 1 m. altum. *Culmi* erecti, 8–10-nodes, simplices, glabri, laeves. *Foliorum vaginæ* striatae, latae, glabrae, teretes vel superne plus minusve carinatae, sublaxae, apice rotundae, inferiores acutae, elaminatae; ligulae truncatae, membranaceae, circiter 1.5 mm. longae; pseudopetiole explanati, superne profunde canaliculati, apice dense villosi, ceterum glabri, inferiores ad 2.5 cm. longi, superiores multo breviores vel plerumque nulli; laminae oblongo-lanceolatae, acuminatae, 15–20 cm. longae, 4–6 cm. latae, inferiores basi forte sagittatae, superiores cordatae, glabrae, nervis reticulatis, marginibus scabridis. *Panicula* pyramidalis, laxa, circiter 20 cm. longa et lata; rami graciles, teretes, purpurati, basin versus espiculati, laxe ramosi, ramuli paullo spiculati, laeves; pedicelli capillares, purpurati, laeves, laterales 2–6 mm. longi. *Spiculae* late ovatae, compressae, 7–10 mm. longae, 6–7 mm. latae, internodiis rhachillae inter anthoecia ♂ brevissimis. *Glumae* inaequales; inferior late obovata, truncata, circiter 3 mm. longa et lata, 9–11-nervis, sparse pubescens, marginibus ciliatis; superior cuneata, subgibbosa, 2 mm. longa, 7–11-nervis, puberula. *Anthoecium* ♀ *unicum*: lemma subcartilagineum, circiter 9-nerve, subcomplanatum, late ovatum, obtusum, acuminatum, gibbosum, circiter 3 mm. longum, asperulum et superne sparse pubescens; palea elliptica, cartilaginea, circiter 2.5 mm. longa. *Anthoecia* ♂ 8–12, patentia; lemmata ovata, acuta, 3–4 mm. longa, herbaceo-membranacea, 5-nervia, apicem versus asperula; paleae lemmatibus breviores, membranaceae; antherae 2.5 mm. longae.

Mexico: Temascaltepec District; near the bridge at Acatitlan, Sept. 23, 1933, *Geo. B. Hinton* 4793 in Herb. Kew.

The strongly sagittate leaf-blades of this species, borne on long pseudopetioles, distinguish it from all other members of the genus, while the short, broadly ovate spikelets with closely imbricate male florets are characteristic of this and the following species.

Zeugites Hintoni Hartley, sp. nov.; affinis *Z. Pittieri* Hack., a qua culmis superne pubescentibus, paniculis minoribus, spiculis et glumis brevioribus, anthoeciis ♀ saepe duobus, internodiis rhachillae brevissimis differt.

Gramen perenne, plus metrum altum. *Culmi* erecti, circiter 6-nodes, simplices, teretes, apicem versus et infra nodos pubescentes.

Foliorum vaginae striatae, latae, teretes vel superne plus minusve carinatae, internodiis breviores, apice rotundae, glabrae, marginibus pubescentibus; ligulae brevissimae, breviter ciliatae; pseudo-petiolii carinati, circiter 5 mm. longi, dense hirsuti; laminae lanceolatae, 15–20 cm. longae, 4–5 cm. latae, inferiores breviores, nervis reticulatis, sparse pubescentes, marginibus scabridis. *Panicula* subpyramidalis, laxa, 12–15 cm. longa et lata; rami solitarii vel raro 2-nati, teretes, basin versus ramosi et spiculati, laeves; pedicelli graciles, laeves, laterales 2–6 mm. longi. *Spiculae* ovatae, compressae, 7–9 mm. longae, 3–5 mm. latae, purpuratae. *Glumae* inaequales, glabrae, nervis reticulatis; inferior orbicularis, circiter 2.5 mm. longa, conspicue 9–11-nervis; superior cuneata, subgibbosa, 2 mm. longa, circiter 9-nervis. *Anthoecia* ♀ 1 vel 2; lemma anthoecii inferi subcartilagineum, circiter 11-nervis, oblatum, gibbosum, acuminatum, apice obtusum, circiter 3 mm. longum, glabrum, vel superne asperulum; palea obovata, concava, cartilaginea, 2–2.5 mm. longa; anthoecium secundum ♀ infero simile vel lemma herbaceo-membranaceum et vix gibbosum. *Anthoecia* ♂ 8–12, imbricata, internodiis rhachillae brevissimis; lemmata anguste ovata, 3–4 mm. longa, herbaceo-membranacea, 5–7-nervia, glabra; paleae lemmatibus paullo breviores, membranaceae; antherae 2–2.5 mm. longae.

Mexico: Temascaltepec District; on a cliff at Nanchititla, Aug. 16, 1933, *Geo. B. Hinton* 4538 in Herb. Kew.

This grass is readily distinguished from all other species of *Zeugites* by the occurrence of a second female floret in many of the spikelets, and also by the pubescence of the culm below the panicle and below the nodes.

***Sporobolus Hintoni* Hartley**, sp. nov.; annua; nervi culmorum infra nodos et carinae vaginarum crateriformi-tuberculati; laminae planae, marginibus serrulatis vel pilis clavatis ciliatis; rami paniculae capillares, tuberculati et sparse pilosi; spiculae 2.6–3 mm. longae, glumis inaequalibus.

Gramen annuum, 0.5–1 m. altum. *Culmi* erecti, 4–6-nodes, sparse ramosi, teretes, glabri sed infra nodos nervis crateriformi-tuberculatis. *Foliorum vaginae* striatae, carinatae, internodiis breviores, carinis crateriformi-tuberculatae, margines versus pilosae; ligulae ciliolatae; laminae lineares, planae, ad 12 cm. longae, 4–8 mm. latae, glabrae, marginibus serrulatis vel basin versus pilis clavatis ciliatis. *Panicula* oblonga, laxa, 20–30 cm. longa, 10–15 cm. lata; rhachis tuberculata; rami solitarii, capillares, sparse ramosi, ad 8 cm. longi, tuberculati et sparse pilosi; pedicelli capillares, glabri, laterales 2–6 mm. longi. *Spiculae* 2.6–3 mm. longae, flavescens; glumae inaequales, membranaceae, glabrae; inferior elliptica, obtusa, 1.5 mm. longa; superior elliptica, subacuta, 1-nervis, 2.4–2.8 mm. longa; lemma ellipticum, subacutum, 1-nervis, 2.6–3 mm. longum, membranaceum, glabrum; palea late elliptica,

obtusa, 2.6–3 mm. longa, membranacea, glabra ; antherae circiter 2 mm. longae ; caryopsis oblonga, 1.5 mm. longa.

Mexico : Temascaltepec District ; Vigas, 1,080 m., Nov. 16, 1932, *Geo. B. Hinton* 2610 in Herb. Kew.

This grass shows no affinity with any of the annual species of *Sporobolus* which occur in north and central America. The inflorescence and spikelets somewhat resemble those of the perennial *S. Palmeri* but it is readily distinguished from that species by the crateriform tubercles on the culms and leaf-sheaths, the flat blades, and the very slender, pilose branches of the panicle.

IV.—MALAYAN GRASSES. C. E. HUBBARD.

Cymbopogon calcicola C. E. Hubbard, sp. nov. ; affinis *C. flexuoso* (Nees ex Steud.) W. Wats., a quo inflorescentiis plerumque laxioribus, spatheolis longioribus, gluma inferiore spicularum fertilium elliptico-lanceolata inter carinas 2–5-nervi, aristis longioribus differt.

Gramen perenne, dense caespitosum, ad 1.5 m. altum ; innovationes intravaginales. *Culmi* erecti, validiusculi, teretes, glabri, laeves, infra inflorescentiam simplices et 2-nodes. *Foliorum vaginæ* striatae, laeves, apice auriculatae, auriculis erectis obtusis brevibus ligulae adnatis, ore plerumque breviter pubescentes, basales compressae, inferne carinatae, dorso apicem versus rotundatae, 30–50 cm. longae, basi latae, superne gradatim attenuatae, stramineae, basi inter strias villosulae, ceterum glabrae, nitentes, coriaceae, superiores teretes, internodiis breviores, nodis obscure pubescentes, ceterum glabrae ; ligulae obtusae vel truncato-obtusae, ad 3 mm. longae, scariosae ; laminae lineares, basi et apice longe attenuatae, apice setaceae, ad 1.3 m. longae et 1.2 cm. latae, planae vel siccitate involutae, virides, glabrae, marginibus scabridae, ceterum laeves, costa media prominente flavida. *Inflorescentia* spatheata, 40–60 cm. longa, demum laxiuscula, multiramosa ; rami filiformes, multinodes, laxè divisi, circa nodos pubescentes ; spatheolae anguste lanceolatae, subacutae, 2–2.3 cm. longae, brunneae, papyraceae, marginibus convolutis ; pedunculi filiformes, 8–10 mm. longi, apicem versus asperuli. *Racemi* bini, ex spatheolis lateraliter exserti, primo contigui, demum divaricato-patentes, graciles, 1.5–2 cm. longi, virides ; rhacheos internodia filiformia, 2.5–3 mm. longa, dense ciliata, pilis patentibus albis 0.5–1.5 mm. longis, apice minute et inaequaliter biauriculata ; pedicelli omnes gracillimi, 2.5–3 mm. longi, rhacheos internodiis similes ; spicularum par infimum racemi sessilis homogamum, spicularum paria cetera heterogama. *Spiculae fertiles* elliptico-lanceolatae, acutae, 4–5 mm. longae ; callus obtusus, brevissimus, minute barbatus. *Glumae* subaequales, nitentes ; inferior apice acute bidentata, dorso plana, scarioso-chartacea, glabra, carinis supra medium anguste alata vel marginata, inter carinas 2–5-nervis ; superior navicularis, tenuiter acuta, supra medium acute carinata, carina marginata

vel angustissime alata, marginibus ciliolatis hyalinis exceptis scariosa, 1-3-nervis. *Lemma inferum* oblongum (explanatum), truncatum, 3.5-4 mm. longum, hyalinum, 2-nerve, marginibus ciliolatis. *Lemma superum* stipitifforme, bifidum, 2-3 mm. longum, lobis tenuiter subulatis hyalinis ciliolatis; arista geniculata, 10-11 mm. longa, columna 5 mm. longa torta. *Antherae* 1.8-2 mm. longae. *Spiculae pedicellatae* ♂, lanceolatae, acutae, 4 mm. longae. *Glumae* subaequales, glabrae, firme membranaceae; inferior 9-11-nervis, carinis apicem versus scaberula; superior tenuiter 3-nervis, marginibus ciliolata. *Lemma inferum* oblongum (explanatum), truncatum, 3-3.5 mm. longum, hyalinum, 2-nerve, marginibus ciliolatum.

MALAY PENINSULA: Kedah; Gunong Baling, limestone hill, c. 360 m., Jan., 1939, *Singapore Field No.* 36256 (typus); *ibid.*, near summit, very frequent, seldom flowering, May 13th, 1938, *Kiak*.

The leaves when bruised emit a strong odour like citronella oil.

Specimens of a *Cymbopogon* collected by Henderson (*Singapore Field No.* 25224), in a wet cleft of a limestone cliff at Bukit Cheras, Pahang, Malay Peninsula, probably represent a form of the above new species. They differ, however, in the lower surface of the leaf-blades being very minutely asperulous on the nerves, in the looser inflorescence, and in the pedicelled spikelets being shorter, narrower and reduced to the glumes.

Cymbopogon calcicola is also related to the Citronella oil grasses, *C. Nardus* (L.) Rendle and *C. Winterianus* Jowitt, both of which possess wider and awnless fertile spikelets. *C. citratus* (DC. ex Nees) Stapf, the Lemon oil grass, may be distinguished from *C. calcicola* by its narrower, longer and awnless fertile spikelets.

Eustachys tenera (J. S. Presl) C. E. Hubbard, comb. nov. *Cynodon tener* J. S. Presl in C. B. Presl, *Reliq. Haenk.* **1**, 291 (1830). *Chloris obtusifolia* Balansa in Morot, *Journ. de Bot.* **4**, 166 (1890). *C. tenera* (J. S. Presl) Scribn. in Report Missouri Bot. Gard. **10**, 41, t. 40 (1899). *C. Ridleyi* Hack. in Oesterr. Bot. Zeitschr. **52**, 237 (1902). *Eustachys obtusifolia* (Balansa) A. Camus in Lecomte, *Fl. Indo-Chine*, **7**, 541 (1923).

Distrib. China (Hainan), Tonkin, Siam, Malay Peninsula, Celebes and the Philippines.

V.—GRAMINEAE AUSTRALIENSES: III.*

C. E. HUBBARD.

Coelorhachis rottboellioides (R. Br.) Stapf ms., comb. nov. *Ischaemum rottboellioides* R. Br. Prodr. 205 (1810). *Andropogon rottboellioides* (R. Br.) Steud. Syn. Pl. Glum. **1**, 382 (1854). *Rott-*

* Continued from K.B. 1934, 451.

boellia ophiuroides Benth. Fl. Austral. 7, 514 (1878). *R. ophiuroides* Benth. var. *genuina* Hack. in DC. Monogr. Phan. 6, 304 (1889). *Manisuris rottboellioides* (R. Br.) O. Kuntze, Rev. Gen. Pl. 779 (1891). *Rottboellia rottboellioides* (R. Br.) Druce in Rep. Bot. Exch. Cl. Brit. Isles, 4, 644 (1917).

Sporobolus Mitchellii (Trin.) C. E. Hubbard, comb. nov. *Vilfa Mitchellii* Trin. in Mém. Acad. Imp. Sci. St.-Petersb. sér. 6, 6, pt. 2, 53 (1840). *Sporobolus Benthami* F. M. Bailey in Queensl. Dept. Agri., Bot. Bull. no. 13, 16 (1896).

Leptochloa Brownii C. E. Hubbard, nom. nov. *Cynodon polystachyus* R. Br. Prodr. 187 (1810). *Leptochloa polystachya* (R. Br.) Benth. Fl. Austral. 7, 617 (1878), non Kunth (1829).

Leptochloa debilis Stapf ms., nom. nov. *Eragrostis imbecilla* Benth. Fl. Austral. 7, 643 (1878), quoad descr. et specim., non *Poa imbecilla* G. Forst. (1786).

Leptochloa asthenes (Roem. et Schult.) C. E. Hubbard, comb. nov. *Poa imbecillis* R. Br. Prodr. 181 (1810), non G. Forst. (1786). *Poa asthenes* Roem. et Schult. Syst. Veg. 2, 574 (1817). *Eragrostis imbecilla* (R. Br.) Steud. Syn. Pl. Glum. 1, 279 (1854).

Eragrostis australasica (Steud.) C. E. Hubbard, comb. nov. *Glyceria australasica* Steud. Syn. Pl. Glum. 1, 286 (1854). *Poa ramigera* F. Muell. in Trans. Vict. Inst. 1855, 45, et Fragm. Phyt. Austral. 8, 131 (1873). *Glyceria ramigera* F. Muell. ex Benth. Fl. Austral. 7, 659 (1878).

The basal hilum and gelatinous pericarp of its grain, membranous 3-nerved lemmas, ciliate ligules and the anatomy of its leaf-blades are characteristic of the genus *Eragrostis*.

Plectrachne Drummondii C. E. Hubbard, sp. nov.; affinis *P. danthonioidi* (F. Muell.) C. E. Hubbard, a qua culmis et foliorum vaginis elanatis differt.

Gramen perenne, caespitosum, 1.2–1.6 m. altum. *Culmi* erecti, validiusculi, simplices, solidi, rigidi, circiter 3-nodes, tenuiter striati, praecipue nodos versus dense et minute pubescentes. *Foliorum vaginae* elongatae, rigidae, teretes, tenuiter striatae, striis minute asperulis, ceterum glabrae et laeves, basales imbricatae, ceterae internodiis demum breviores; ligulae ad seriem densam ciliorum redactae; laminae angustissime lineares, setaceae, pungentes, ad 50 cm. vel ultra longae, teretes, arcte involuto-conduplicatae, circiter 1.5 mm. diametro, rigidissimae, subtus glabrae et laeves, supra dense et minute pubescentes. *Panicula* linearilanceolata, laxa, 40–45 cm. longa, 3–4 cm. lata; rhachis scaberula; rami simplices vel infimus divisus, gracillimi, flexuosi, scaberuli,

ad 10 cm. longi; pedicelli flexuosi, scaberuli vel minute hispiduli, 15–18 mm. longi. *Spiculae* oblongae, demum hiantes, 18–20 mm. longae (aristis exclusis). *Glumae* anguste oblongo-lanceolatae, acuminatae, obtusae vel emarginatae, subaequales, 11–16 mm. longae, mucronatae vel aristam ad 1.5 mm. longam gerentes, dense et minute asperulae, 5–9-nerves. *Anthoecia fertilis* 4–7; callus acutus, 1–1.5 mm. longus, dense barbatus; rhachillae internodia 2–3 mm. longa. *Lemmata fertilis* oblonga (explanata), 6.5–7 mm. longa (aristis exclusis), coriacea, dorso et marginibus basin versus laxe et molliter pubescentia, 8–11-nervia; aristae 3-nerves, demum curvatae, laterales ad 11 mm. et mediae ad 13 mm. longae. *Paleae* anguste oblongo-lanceolatae, truncatae, 8–8.5 mm. longae, firme membranaceae, carinis supra medium pilis brevissimis patentibus rigide ciliolatae. *Antherae* 4–4.5 mm. longae.

WESTERN AUSTRALIA: Melbourne District; west from Wongan Hills, 13.10.1903, *Morrison* (Herb. Perth.); without precise locality, *Drummond* 128 (typus).

Plectrachne Dielsii C. E. Hubbard, sp. nov.; affinis *P. Drummondii* C. E. Hubbard, a qua paniculis spiculis et glumis brevioribus differt.

Gramen perenne, dense caespitosum, 1.1 m. altum. *Culmi* erecti, validiusculi, rigidi, solidi, simplices, infra medium circiter 1-nodes, praecipue paniculam et nodos versus minutissime pubescentes, ceterum minute asperuli. *Folia* plerumque basalia; vaginae striatae, minute asperulae, inferiores latae, arcte imbricatae, rigidae, marginibus ciliatae, ore breviter barbatae, ceterum glabrae, superiores appressae, teretes, internodiis breviores, ore ciliatae; ligulae ad seriem densam ciliorum redactae; laminae angustissimae, pungentes, ad 25 cm. longae, arcte involuto-conduplicatae, teretes, 1–1.3 mm. diametro, rigidissimae, patentes vel recurvatae, subtus glabrae et laeves, supra dense et minutissime pubescentes, basi villosulae. *Panicula* lanceolato-oblonga, laxa, circiter 25 cm. longa, 3.5–5 cm. lata; rhachis angulis scaberula, dense et minutissime pubescens; rami solitarii, simplices, 6–1-spiculati, tenuiter filiformes, flexuosi, scaberuli, inferiores ad 5 cm. longi; pedicelli scaberuli, flexuosi, 4–10 mm. longi. *Spiculae* oblongae, 10–15 mm. longae. *Glumae* chartaceae, dense et minute asperulae, oblongae vel oblongo-lanceolatae (explanatae), acutae vel obtusae, subaequales, 6–8 mm. longae, tenuiter 5–6-nerves. *Anthoecia fertilis* 3–4; callus acutus, 0.5–1 mm. longus, dense barbatus; rhachillae internodia 2 mm. longa. *Lemmata fertilis* ovato-oblonga (explanata), 5–6 mm. longa (aristis exclusis), coriacea, dorso et marginibus pubescentia, ceterum glabra et laevia, 11-nervia; aristae 1–3-nerves, strictae, laterales ad 8 mm., mediae ad 10 mm. longae. *Paleae* anguste oblongae, acuminatae, apice truncatae, 7–7.5 mm. longae, carinis basin versus pilis appressis ciliatae et supra medium pilis

patentibus vel reflexis breviter ciliolatae, firme membranaceae. *Antherae* 3.5–4.5 mm. longae.

WESTERN AUSTRALIA: Avon District; Tammin, in dry open sandy thickets, 250 m., 25.10.1901, *Diels* 5085 (Herb. Berol.).

Plectrachne Melvillei C. E. Hubbard, sp. nov.; affinis *P. Dielsii* C. E. Hubbard, a qua lemmatibus paleis et antheris brevioribus, callo rotundato-obtusio, foliorum vaginis siccitate resiniferis differt.

Gramen perenne, dense caespitosum, 50–80 cm. altum. *Culmi* erecti, graciles, solidi, simplices, 1–2-nodes, glabri, laeves vel asperuli. *Foliorum vaginae* inferiores latiusculae, imbricatae, coriaceae, marginibus scariosis, nitentes, viscosae, siccitate resiniferae, pallide stramineae, basi et dorso et marginibus villosae, vel ore barbato excepto glabrae, laeves, superiores internodiis breviores, glabrae, laeves vel asperulae; ligulae ad seriem ciliorum brevis-simorum redactae; laminae setaceae, pungentes, ad 30 cm. longae, teretes, arcte involuto-conduplicatae, 0.8–1.3 mm. diametro, rigidae, subtus glabrae et laeves, supra dense et minute pubescentes. *Panicula* anguste lanceolata vel oblonga, contracta vel densiuscula, 10–30 cm. longa, 2–3 cm. lata; rhachis glabra, laevis vel scaberula; rami plerumque solitarii, erecti, filiformes, simplices, scaberuli; pedicelli laterales 1.5–8 mm. longi. *Spiculae* anguste oblongae, 12–15 mm. longae (aristis exclusis). *Glumae* lanceolato-oblongae, acutae, breviter aristatae, 6–11 mm. longae, tenuiter chartaceae, marginibus membranaceis, pallide brunneae, glabrae, laeves vel asperulae, 3–5-nerves. *Anthoecia fertilis* 4–8; callus 0.3–0.5 mm. longus, rotundo-obtusius, dense et breviter barbatus; rhachillae internodia 1 mm. longa. *Lemmata fertilis* oblonga (explanata), 4 mm. longa (aristis exclusis), tenuiter coriacea, dorso seriebus pilorum appressorum brevium obscure pubescentia, 9-nervia; aristae erectae vel curvatae, 3-nerves, laterales ad 7 mm. longae, mediae ad 9 mm. longae. *Paleae* angustissime elliptico-oblongae, obtusissimae, 4.5–5 mm. longae, firme membranaceae, infra medium inter carinas minute pubescentes, carinis angustissime alatis et alis ciliolatis. *Antherae* 2–2.5 mm. longae.

WESTERN AUSTRALIA: Wiluna District, mostly associated with Mulga, July, 1937, *Melville* in *Herb. Burbidge* 458 (typus).

NORTHERN TERRITORY: Petermann Ranges; Docker Gorge, July, 1926, *Basedow* 153.

Plectrachne desertorum C. E. Hubbard, sp. nov.; affinis *P. rigidissimae* (Pilger) C. E. Hubbard, a qua spiculis longioribus, glumis longioribus 8–13-nervibus vel acutis vel 3-dentatis vel 3-aristatis, paleis longioribus differt.

Gramen perenne caespitosum, 40–60 cm. altum; innovationes numerosae, foliosae, ramosae. *Culmi* erecti, graciles, simplices, solidi, 2-nodes, glabri, laeves. *Foliorum vaginae* innovationum arcte

imbricatae, teretes, coriaceae, marginibus et apice ciliatae vel villosae, ceterum glabrae, eae culmorum internodiis demum breviores, glabrae, laeves; ligulae ad seriem densam ciliorum redactae; laminae setaceae, valde pungentes, 4–10 cm. longae, teretes, arcte involuto-conduplicatae, circiter 1 mm. diametro, rigidissimae, erectae, demum horizontaliter patentes, subtus glabrae, laeves, supra dense et minute pubescentes. *Panicula* angusta, laxissima, 10–15 cm. longa, 2–3 cm. lata; rhachis gracilis, scaberula; rami bini vel solitarii, tenuiter filiformes, flexuosi, scaberuli, plerumque 1-spiculati, 1–4 cm. longi. *Spiculae* (juveniles) oblongae, 15–18 mm. longae (aristis exclusis). *Glumae* oblongo-lanceolatae, firme chartaceae, superne minute et obscure asperulae, vel acutae vel tridentatae vel uni- vel tri-aristatae, aristis 1–4 mm. longis; inferior 10–13 mm. longa, 9–13-nervis; superior 11–15 mm. longa, 8–9-nervis. *Anthoecia fertilis* 3–5; callus acutus, 1.5–1.7 mm. longus, barbatus; rhachillae internodia 2 mm. longa, glabra. *Lemmata fertilis* oblonga (explanata), 4–7 mm. longa (aristis exclusis), coriacea, dorso et marginibus pubescentia, 11–13-nervia; aristae erectae, 3-nerves, laterales ad 11 mm. longae, mediae ad 16 mm. longae. *Paleae* oblongae, obtusae, 5–8 mm. longae, pilis appressis sericeis dense pubescentes. *Antherae* ad 4 mm. longae.

WESTERN AUSTRALIA: Weld District; east of Laverton, July, 1916, *Geological Survey Exped.* 145; Victoria Desert, 16.9.1891, *Helms* (typus).

Plectrachne Helmsii C. E. Hubbard, sp. nov.; affinis *P. pungenti* (R. Br.) C. E. Hubbard, a qua glumis et lemmatibus longioribus, paleis membranaceis differt.

Gramen perenne caespitosum, circiter 80 cm. altum. *Culmi* erecti, graciliusculi, simplices, circiter 2-nodes, tenuissime striati, glabri, laeves. *Foliorum vaginae* ore pilis ad 2 mm. longis barbatae vel ciliatae, vel glabrae et laeves, tenuiter striatae, inferiores imbricatae, intermediae et superiores internodiis multo breviores; ligulae ad seriem densam ciliorum redactae; laminae setaceae, valde pungentes, ad 14 cm. longae, teretes, arcte involuto-conduplicatae, 1 mm. diametro, rigidae, erectae vel patentes, subtus glabrae et laeves, supra dense et minute pubescentes. *Panicula* anguste oblonga, contracta, 10–14 cm. longa, 1.5–2 cm. lata; rhachis gracillima, dense scaberula; rami solitarii, erecti, filiformes, paucispiculati, dense scaberuli; pedicelli dense scaberuli, laterales ad 2 mm. longi, terminales ad 10 mm. longi. *Spiculae* anguste oblongae, 11–13 mm. longae (aristis exclusis). *Glumae* anguste oblongo-lanceolatae, acute acuminatae, plerumque 12–15 mm. longae, subaequales vel superior inferiore paullo brevior, chartaceae, marginibus membranaceis, minute asperulae; inferior 5–7-nervis; superior 5-nervis; rhachillae internodium inter glumas dentem lateralem obtusum vel acutum 0.2–0.5 mm. longum gerens. *Anthoecia fertilis* 3–4; callus acutus, 1 mm. longus, dense et breviter barbatus; rhachillae internodia 2–3 mm. longa, minute

et sparse pubescentia. *Lemmata fertilia* oblonga (explanata), 4.5–5 mm. longa (aristis exclusis), coriacea, pilis appressis brevibus tenuiter pubescentia, 3-nervia, infra aristas linea transversa conspicua praedita; aristae demum recurvatae, scaberulae, 3-nerves, laterales ad 8 mm. longae, mediae ad 12 mm. longae. *Paleae* anguste oblongae, acuminatae, apice truncatae vel emarginatae, 5–5.5 mm. longae, membranaceae, carinis angustissime alatis, alis ciliolatis. *Antherae* 2–2.8 mm. longae.

SOUTH AUSTRALIA: Everard Range, 8.6.1891, *Helms*.

Plectrachne Bynoei *C. E. Hubbard*, sp. nov.; a ceteris speciebus lemmate infimo uniaristato, lemmatibus membranaceis, spiculis imbricatis in ramis secundis paniculae dispositis differt.

Gramen perenne. *Culmi* graciles, paniculam versus minute asperuli. *Foliorum vaginae* coriaceae, nitentes, laeves, marginibus ciliatae, ore rotundo-truncato pilis longis sericeis dense barbatae, ceterum glabrae; ligulae ad seriem ciliorum redactae; laminae angustissime lineares, setaceae, curvatae, flexuosae, valde pungentes, ad 45 cm. longae, arcte involuto-conduplicatae, vel explanatae et ad 2.5 mm. latae, subtus glabrae et laeves, supra prominenter nervosae et minutissime pubescentes vel asperulae. *Panicula* contracta, densiuscula, lanceolato-oblonga, flexuosa, 40 cm. longa, 4 cm. lata; rhachis angulata, angulis scaberulis, glabra; rami plerumque solitarii, ascendentes, simplices, secundi, graciles, scaberuli; pedicelli 1–2 mm. longi, scaberuli. *Spiculae* imbricatae, pallidae, anguste oblongae vel demum hiantes, ad 8 mm. longae (aristis exclusis). *Glumae* lanceolatae, mucronatae vel minute aristulatae, membranaceae, 3-nerves, minute asperulae; inferior 7–9.5 mm. longa; superior 5.5–7 mm. longa. *Anthoecia fertilia* 2, glumis breviora; callus 0.2 mm. longus, obtusus, minute pubescens; rhachillae internodia gracillima, 1.5 mm. longa, glabra. *Lemma inferum* oblongum (explanatum), 2–2.3 mm. longum (arista exclusa), membranaceum, breviter pubescens, 3-nerve, 3-lobum, lobis lateralibus lanceolatis acutis 1.2–1.5 mm. longis, lobo medio aristam scaberulam gracillimam planam basi 1–3-nervem circiter 7 mm. longam gerente. *Lemma superum* lemmati infero simile sed triaristatum, lobis lateralibus aristam 4 mm. longam gerentibus, lobo medio aristam 6 mm. longam gerente. *Paleae* anguste oblongae, minute 2-lobae, 2.8–3 mm. longae, tenuiter membranaceae, infra medium inter carinas pubescentes. *Antherae* 1–1.7 mm. longae.

WESTERN AUSTRALIA: "North-west coast," *Bynoe*.

Amphibromus Whitei *C. E. Hubbard*, sp. nov.; affinis *A. Neesii* Steud., sed culmis gracilioribus, panicula brevior, spiculis paullo minoribus, glumis et lemmatibus brevioribus, glumis 1–3-nervibus differt.

Gramen perenne (?), caespitosum, ad 35 cm. altum. *Culmi* erecti vel geniculati, graciles, simplices, 3-nodes, glabri laevesque.

Foliorum vaginæ tenuiter striatæ, asperulæ vel laeves, internodiis plerumque longiores, basales basi appresse sericeo-pilosæ, ceteræ glabræ; ligulæ angustæ, acute acuminatæ, ad 8 mm. longæ, hyalinæ; laminæ anguste lineares, acutæ, ad 15 cm. longæ et 1.8 mm. latæ, planæ, tenues, glaucae, glabræ, scaberulæ. *Panicula* angusta, laxa, ad 10 cm. longa et 1.5 cm. lata, flexuosa, pallide viridis; rhachis gracillima, scaberula; rami plerumque 2-3-nati, filiformes, scaberuli, inferiores ad 5 cm. longi; pedicelli laterales 1-2 mm. longi, terminales multo longiores. *Spiculæ* anguste oblongæ, 7-10 mm. longæ, 1.5-2 mm. latæ, laxæ 4-5-floræ, pallide virides; rhachillæ internodia 1-1.3 mm. longa, minute pubescentia. *Glumæ* explanatæ anguste ovatæ, obtusæ, hyalinæ; inferior 2-2.3 mm. longa, breviter 1-nervis; superior 2.5-3 mm. longa, breviter 3-nervis. *Lemmata* explanata ovato-oblonga, obtuse biloba, 4-4.5 mm. longa, 7-nervia, apice hyalina, ceterum herbacea, demum indurata, muriculata, e medio aristata; arista geniculata, 11-14 mm. longa, columna 5 mm. longa; callus pilis albis ad 1 mm. longis dense barbatus. *Paleæ* anguste oblongæ vel lanceolato-oblongæ, obtusæ, 3-3.5 mm. longæ, carinis angustissime alatis et superne ciliolatis. *Antheræ* 1-3, 0.3-0.5 mm. longæ. *Caryopsis* oblongo-ellipsoidea, 1.3 mm. longa.

QUEENSLAND: Maranoa District; Roma, on edge of large fresh-water swamp, 25.10.1933, *White* 9580.

The number of anthers varies from one to three, but when three are present then two are much reduced in size and devoid of pollen. Most florets appear to be cleistogamous as the very small anthers have been found enclosed between the lemma and palea and entangled with the stigmatic hairs at the apex of the caryopsis, whilst in other cases they have been found pressed against the apex of the caryopsis.

Although this species has been described as a perennial on account of the presence of sterile shoots, the rootstock has the appearances of that of an annual grass.

This is the first species of *Amphibromus* to be recorded from Queensland, although it is quite possible that *A. Neesii* Steud. [*A. nervosus* (R. Br.) Druce, *Avena nervosa* R. Br. (1810), non Lam. (1791)] may occur in the Stanthorpe-Wallangarra District, as it has been found in the adjoining parts of N.S. Wales. Five species of *Amphibromus* are now known from Australia; they are *A. Neesii* Steud., *A. Archeri* (Hook. f.) P. F. Morris, *A. Whitei* C. E. Hubbard, *A. recurvatus* Swallen and *A. gracilis* P. F. Morris.

VI.—WHYTOCKIA AND OSHIMELLA. B. L. BURTT.

In 1919 W. W. Smith (Trans. Bot. Soc. Edinb. 27, 338) proposed the genus *Whytockia* (*Gesneriaceæ*) for the accommodation of *Stauranthera chiritiflora* Oliv. When originally describing this

species Oliver (Hook. Ic. Pl. **25**, t. 2454: 1896) recognized its anomalous position in *Stauranthera* but decided that it was undesirable to establish a new genus "in view of the artificial character of many already described and the influx of new forms from Eastern Asia." Further discoveries, however, have not brought to light any species linking *S. chiritiflora* to the other species of *Stauranthera* and the establishment of the genus *Whytockia* seems fully justified.

More recently another genus, *Oshimella*, has been proposed by the Japanese botanists G. Masamune and S. Suzuki (Journ. Soc. Trop. Agric. **6**, 571: 1934) for two Formosan plants: one a new species, *O. formosana*, the other based on *Rhynchoglossum Sasakii* Hayata (Ic. Pl. Formos. **6**, 34: 1916). I have seen no authenticated specimens of these species, but there is a Formosan specimen in the Kew herbarium that evidently belongs to one of them. From the description and illustration there is no doubt that they are congeneric with *Whytockia chiritiflora*, and the genus *Oshimella* is accordingly reduced to *Whytockia*.

Oshimella, however, was not validly published, as it was not described in accordance with the International Rules. The original publication of *Oshimella* consists of a combined generic and specific description of *O. formosana* and a new combination for a second species, *O. Sasakii*. Under Art. 43 a generico-specific description is valid only for monotypic genera, whereas *Oshimella* included two species at its inception.

Masamune and Suzuki described *Oshimella* as having alternate leaves, but their photograph shows that *O. formosana* is very similar in leaf characters to *Whytockia chiritiflora*. The leaves are not alternate, but show very strongly the anisophylly which is not an uncommon character in *Gesneriaceae*.*

Whytockia is certainly closely allied to *Stauranthera*, but differs from it in a number of characters. The calyx is quite small and 5-lobed, not in any way resembling the campanulate, winged calyx of *Stauranthera*. The corolla has a well-developed tube, and resembles *Chirita*, as Oliver pointed out, rather than *Stauranthera*. In correlation with the long corolla-tube the filaments are slender and the stamens didynamous, contrasting with the short, thick, equal filaments of *Stauranthera*. In this respect the difference between *Whytockia* and *Stauranthera* is of the same order as that between *Haberlea* and *Ramonda*.

From the descriptions it seems quite probable that *Oshimella Sasakii* and *O. formosana* are but a single species, and therefore no

* Many instances are described in W. Figdor, Die Erscheinung der Anisophyllie, 88 (1909).

combination for the later of these names is proposed at present. *O. Sasakii* becomes :—

Whytockia Sasakii (Hayata) B. L. Burtt, comb. nov. *Rhynchoglossum Sasakii* Hayata, Ic. Pl. Formos. 6, 34 (1916). *Oshimella Sasakii* (Hayata) Masamune et Suzuki in Journ. Soc. Trop. Agric. 6, 571 (1934).

VII.—MISCELLANEOUS NOTES.

Royal Horticultural Society.—We record with pleasure the award of the following Honours by the Council of the Royal Horticultural Society: the Victoria Medal of Honour to MAJOR F. C. STERN, O.B.E., M.C.; the Veitch Memorial Gold Medal to MR. T. HAY, Superintendent of the Royal Parks, on his retirement; and the Loder Rhododendron Cup to DR. J. HUTCHINSON, Keeper of Museums, Royal Botanic Gardens, Kew.

A New Combination in Hakea.—In the course of naming a collection of *Proteaceae* from south-east Australia it was found that the following new combination was required :—

Hakea salicifolia (Vent.) B. L. Burtt, comb. nov. *Embothrium salicifolium* Vent. Jard. Cels. t. 8 (1800). *Embothrium salignum* Andr. Bot. Rep. 3, t. 215 (1802). *Conchium salicifolium* Gaertn. f. De fruct. et sem. 3, 217, t. 219 (1807). *Conchium salignum* (Andr.) Sm. in Trans. Linn. Soc. 9, 124 (1808). *Hakea saligna* (Andr.) Knight, Proteac. 108 (1809).

B. L. BURTT.

Chronica Botanica.—Several numbers of this international publication have been received. It is now being published fortnightly in the U.S.A. (P.O. Box 151, Waltham, Mass.)

Index Londinensis.*—An achievement of outstanding importance is signalled by the publication, in two parts, of the Supplement (covering the years 1921-35) to the Index Londinensis, a work which the passage of time has proved to be indispensable to all students of systematic botany and horticulture. Its publication marks the conclusion of a most valuable work.

Following the system adopted in the main body of the work the citations concern illustrations of phanerogams, ferns and fern allies, those of lower cryptogams, fossil plants and plant anatomy

* *Index Londinensis to Illustrations of Flowering Plants, Ferns and Fern Allies: Supplement for the years 1921-35.* Prepared under the Auspices of the Royal Horticultural Society of London at the Royal Botanic Gardens, Kew, by W. C. Worsdell under the direction of Sir Arthur W. Hill. Part I. Pp. [viii+] 497. Part II. Pp. [iv+] 515. Price £10-10-0. (Oxford: Clarendon Press; London: Oxford University Press, 1941.)

being excluded. In order to keep the size of the Supplement within limits only a selection of references is given, but the work of exclusion has been carried out with discrimination by competent compilers at Kew. References published prior to 1921 and accidentally omitted from the main work are included.

Part I consists of 497 pages and contains references to illustrations of plants *Aa* to *Hystrix*, while Part II contains 515 pages of references from *Iaera* to *Zygotritonia*. In these references no distinction is made between species, sub-species, varieties or hybrids so long as they are accompanied by scientific names. Illustrations with a generic name only are not included. No attempt has been made to correct inaccuracies when registering citations, unless they are obviously the result of accidents, but where the names differ from those given in the text, cross-references are supplied.

In accordance with the plan adopted in the main body of the work, old comprehensive genera have been broken up and the segregate names employed—for instance, the six distinct genera now recognised in *Gnaphalium* are arranged alphabetically and numbered in sequence, following the general heading *Gnaphalium*. A number is also attached to each species cited, indicating the genus to which it belongs according to the most recent view.

Symbols are used to indicate whether the illustration is coloured (shown by an *), or whether of a flower only (*Fl.*), fruit only (*Fr.*), habitus figure only (*Hab.*). Hybrids are indicated by an X. Another useful feature is that where subspecies, varieties, subvarieties or forms are figured in the same work this is indicated by the use of the abbreviations *subsp.*, *var.*, *subvar.*, and *forma* after the reference concerned, or under the specific heading when all the references under that heading are concerned. Generic and specific names are arranged alphabetically, while the references are chronological.

The Supplement, which has been prepared by Mr. W. C. Worsdell and Miss R. Burford, under the direction of Sir Arthur Hill, maintains its high standard both as regards orthography and consistency in the method of citation. Congratulations are due to those responsible for the task of compilation and systematising references to approximately 100,000 plant illustrations, and to the Clarendon Press for the excellence of the printing.

It is not proposed to print a further supplement, but as it is necessary in taxonomic work to keep such works of reference up to date, a card catalogue of new illustrations published from 1936 onwards is being prepared by the Royal Botanic Gardens, Kew. Copies of this catalogue will be available at a modest price.

The Diseases of the Coconut Palm.*—Coconut diseases constitute some of the most difficult problems the plant pathologist

* By H. R. Briton-Jones. Pp. xvi+176, 37 plates, diagram and graphs. Bailliere, Tindall & Cox, London, 1940. Price 10s. 6d.

has to deal with. Not only is the tree an awkward subject for research but the diseases to which it is liable include some which are very obscure in etiology, and have given rise to much speculation. The work before us, completed by the author only a short time before his death in November, 1936, has been brought up to date by Professor E. E. Cheesman, and gives a concise, critical survey of our available knowledge of the subject, which should prove of good service to plant pathologists generally as well as to growers and agricultural officers.

In the first chapters the author discusses the bud rot complex, and differentiates four types of bud rot, namely, bronze leaf wilt—a physiological trouble associated with insufficient soil moisture; *Phytophthora* bud rot due to *P. palmivora*, a disease much less virulent in the West Indies than in India; tapering stem wilt or pencil point, due to starvation and induced in various palms in Trinidad by the long drought of 1926; and red ring, caused by the nematode *Aphelenchus cocophilus*. Five further chapters are devoted to false wilt and lightning strike, stem bleeding disease, root diseases, leaf diseases, and gumming disease and dropping of nuts. The work is, however, not merely a compilation. The personal views of the author are set out with a refreshing vigour and are by no means the least valuable part of the book. For instance, he regards Ashby's leaf-bitten diseases as merely manifestations induced by *P. palmivora*, sometimes supplemented by *Ceratostomella paradoxa* or yeasts as secondary invaders. Problems of control are discussed with a healthy regard for the limitations imposed by practical difficulties, and some useful suggestions are made. The proposal to use the palm *Chrysalidocarpus lutescens* as an index plant in the investigation of physiological troubles is interesting and may well prove of service to future investigators.

The book comprises 176 pages, 87 of which are occupied with the text, 16 by the bibliography, and the rest the plates. It is attractively printed and illustrated with many good photographs and with an excellent coloured frontispiece. The work constitutes a valuable contribution to the literature of the subject, and it is regretted the author did not live to see the fruition of his labour.

S. P. WILTSHIRE.

The Useful and Ornamental Plants in Trinidad and Tobago.*—The senior author of this book has spent many years in Trinidad engaged in both horticultural and botanical work, and has been able to incorporate much of his own experience and observation in it. The present edition differs from the earlier ones (1927 and 1928) in that it has been largely extended, and includes notes on 140 additional species. The lists of economic plants

* By R. O. Williams, Deputy Director of Agriculture, and R. O. Williams, Jnr. Government Printer, Trinidad. Pp. 265. Price 1\$.

have been completely rearranged, and an entirely new feature is the descriptive keys of ornamental plants, based on simple characters. These should prove a valuable feature to the general reader—assuming they function satisfactorily, which use and time alone can prove—for the naming of exotic plants is often very difficult for those with restricted facilities, especially as such plants are generally omitted from local floras and in handbooks.

The subject matter is in alphabetical order according to the botanical name, with cross references for common names. Some cultural notes are included at the end of the book. From one to four pages are devoted to important crop plants, like Cacao, the Banana and Citrus (a group on which Mr. Williams, Snr., is himself an acknowledged authority), and about half a page to minor crops, such as Cassava, Sweet Potato, Pineapple and Vanilla. Among decorative plants, no less than 14 varieties or cultivated forms of *Bougainvillea* are described, including new introductions, and some eight to ten lines are devoted to such plants as *Caesalpinia pulcherrima*, *Barleria cristata*, *Quisqualis indica* and *Abrus precatorius*. The amount of space allotted to each species has been decided with care and good judgment, and this extremely useful book should have a wide appeal not only to those resident in the West Indies but throughout the tropics, its low price proving an additional attraction.

F. H. HOWES.

Swahili Plant Names.*—The fact that a second edition of Mr. Greenway's modest little Dictionary of Swahili Plant Names has been printed is a proof of its utility. The new booklet contains many additional native names, and there have also been added a separate list of botanical and common English names, besides ten pages of diagrams to illustrate the short glossary of botanical terms. We note one or two trifling errors: "Afromomum" for *Aframomum*, "tripinnate" for *bipinnate* (diagram), and "capitula" for *capitulum*. Except for its increased thickness the booklet looks much the same, and as noted in our previous review (K.B. 1938, 87) the printing is excellent.

* "A Swahili-Botanical-English Dictionary of Plant Names," by P. J. Greenway, F.L.S. Government Printer, Dar es Salaam, 1940; pp. 308. Price 4s. Second and enlarged edition.

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